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AMERICAN BEE JOURNAL

JANUARY, 1916

Agricultural College

14.

LEGHORN BREEDERS!

Send in your subscription to **The Leghorn Journal** and keep posted on the progress of the Leghorn industry; as it is devoted exclusively to the different Leghorn fowls. Subscription price 50c per year. Special offer—Send us 10c and the names of five of your neighbors interested in Leghorns, and we will send you The Leghorn Journal for three months.

THE LEGHORN JOURNAL
Appomattox, Virginia

Honey Jars

No. 25 screw cap jars, 1-lb., $4.60 gross. Shipping cases, cartons and cans. Amber honey, 7½ cts. a lb. Light amber 8½ cts. a lb. on two 60-lb. can lots. Catalog of supplies free. **I. J. STRINGHAM,**
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We know we can satisfy you on quality. Write for catalog.

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THE EDITOR, Box 1024, Ridgewood, N. J.

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Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

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BETTER FRUIT PUBLISHING COMPANY
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Such as Winter Cases, Hives, Sections, Covers, Bottoms, Bodies, Supers, Brood-frames of every description, Shipping-cases, Section-holders, Comb-foundation, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Sheboygan, Wis.

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4 50	8.00	16.00
Warranted	1.10	5 50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queens

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

• Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

Special Extra Automobile Bargain

We offer our 4 cylinder, 35 horse power, covered top delivery automobile, in perfect order. Cost $1500; will sell for $750. Capacity 1500 pounds. Just the thing for a farmer, dairyman, or grocery delivery. If interested, write for more particulars, as the party buying will get a bargain.

THE FRED W. MUTH COMPANY
"The Busy Bee Men"
204 Walnut Street - Cincinnati, Ohio

QUEENS OF QUALITY

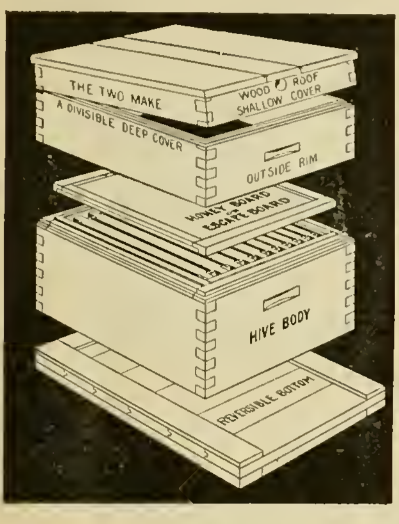
The Editor of the *Beekeepers' Review* and his sons have 1100 colonies of bees that they work for extracted honey. With all those bees working with equal advantage, all having the same care and attention, they have an opportunity unexcelled to ascertain without a reasonable doubt colonies desirable as breeders from a honey-producers' standpoint. Likely never in the history of beekeeping was there a better opportunity to test out the honey getting strain of bees than this. Think of it, 1100 colonies with equal show, and a dozen of those colonies storing 250 to 275 pounds of surplus honey this last poor with us) season, while the average of the entire 1100 was not more than 40 pounds per colony. We have sent two of our very best breeding queens (their colonies producing 275 pounds surplus each during the season of 1915) to John M. Davis and to Ben G. Davis, both of Spring Hill, Tenn., and they will breed queens for the *Review* during the season of 1916 from those four superior honey-gathering breeding queens. Those young queens will be mated with their thoroughbred drones. Our stock is of three-banded strain of Italians, also that of John M. Davis, while Ben G Davis breeds that disease resisting strain of goldens that is becoming so popular.

By this time you are likely thinking that your strain of bees may be improved by the addition of this superior strain of *Review* queens, and how you can secure one or more of those superior honey-gathering queens as breeders. We will tell you: They will be sold to none except *Review* subscribers. If you are a paid-in-advance subscriber to the *Review* for 1916, we will mail you one of the daughters of those famous queens in June for a dollar If not a subscriber to the *Review* for 1916, send $1.75 for a year's subscription to the *Review* and one of those famous young queens. Those queens are well worth $2.00 each compared to the price usually charged for ordinary queens, but we are not trying to make money out of this proposition, only we are anxious to have every subscriber of the American Bee Journal a subscriber of the *Review*, and we are taking this way to accomplish the object. A few of the very first orders for queens that we receive can be mailed in May, but the majority will not be mailed until June. Orders filled in rotation. Have your order booked early and avoid disappointment. Address, with remittance,

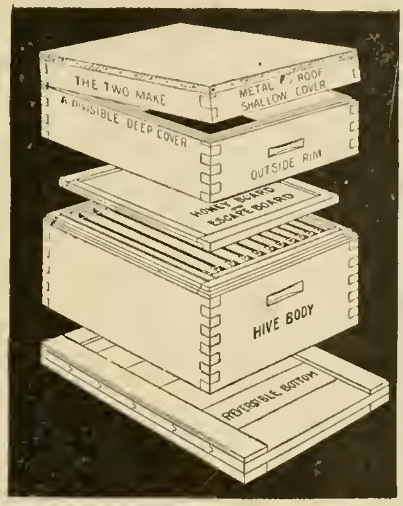
THE BEEKEEPERS' REVIEW, Northstar, Michigan

PROTECTION HIVES

Air spaces or packing as you prefer. Seven-eights material in the outer wall, which means that they will last a life time. Used and endorsed as the best hive on the market by many prominent beekeepers of this and other countries.



1 Story Protection Hive with divisible deep wood roof cover, consisting of shallow cover and rim.



1 Story Protection Hive with divisible deep metal roof cover, consisting of shallow cover and rim.

Price, $14.75 for five hives, delivered to any station in the U. S. East of the Mississippi and North of the Ohio Rivers.

NORWICHTOWN, CONN., May 24, 1915.

Our State Agricultural College has just been voted a generous sum of money to be used in the construction of an Apiarian Building and outfit. They are negotiating with me for some colonies, and I will furnish them in your Protection Hives, for I believe them to be the best on the market.

ALLEN LATHAM.

Send for catalog and special circulars. We are the bee hive people. Send us a list of your requirements for 1916, and let us figure with you.

A. G. WOODMAN CO., Grand Rapids, Michigan

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal.

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subscription price postpaid.

Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year.

Sample Copy sent free on request.

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Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

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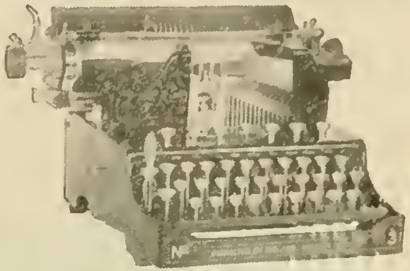

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Only $2.00 a month until the bargain price of $29.60 is paid and the machine is yours. **This startling offer has astounded the typewriter world.** Absolutely the greatest typewriter bargain ever offered. For a short time only I offer a limited number of these standard,

VISIBLE WRITING MODEL No. 3

typewriters at this exceptional price. **Perfect machines, not damaged or shop worn.** Complete outfit, cover, tools, instructions, etc. Machine of standard size but light weight and portable, keyboard of standard arrangement writing the full 84 characters, two color ribbon, tabulator, back spacer, writes on ruled lines; **in fact every late style feature and modern operating convenience,** at less than a third of the regular price, and each letter visible as printed and all previous writing completely visible at all times.

FREE TRIAL You Take NO RISK

My brand new Model No. 3 offer for but $29.60—and only $2 per month.

I won't let you buy this typewriter before you see it. I want you to be absolutely convinced that this is the greatest typewriter bargain ever offered. If you have the slighest use for a typewriter you should accept this amazing offer. **You cannot equal this wonderful value anywhere.** When the typewriter arrives deposit with the express agent $5.60 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me $2.00 a month until my bargain price is paid. If you don't want it, return to the express agent, receive your $5.60 and he returns the machine to me I will pay the return express charges **This machine is guaranteed just as if you paid $100.00 for it.**

ONLY 100 TYPEWRITERS At This Price

There is no time to lose. Fill in the coupon and mail it today—sure. The typewriter will be shipped promptly. There is no red tape—no solicitors—no collectors—no chattle mortgage. It is simply understood that I retain title to the machine until the full $29.60 is paid. You cannot lose. **It is the greatest typewriter opportunity you will ever have.**

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H. A. SMITH, 230—231 N. Filth Ave., Chicago, Ill.

Ship me your Model No. 3, F.O.B. Chicago, as described in this advertisement. I will pay you the $24.00 balance of the SPECIAL $29 60 purchase price at the rate of $2.00 a month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

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TIN CANS

Low Prices on tin cans, especially the Friction-Top style. We buy in carlots and can save you money

DADANT & SONS
Hamilton, Illinois

SHIPPING CASES

We have them and sell at the old price. Send us a list of what you want or send for catalog of the best and cheapest bee supplies of all kinds.

H. S. DUBY & SON, St. Anne, Ill.

Grand Prize was awarded Root Supplies at San Diego.

A Prosperous New Year!

May your success in 1916 exceed your happiest expectations. It will go far toward doing so if your equipment and supplies are made right. And there is just one way to KNOW the best bee supplies—that's by getting

OUR 1916 CATALOG

Ready for delivery January 1. Drop a card for it.

The new catalog is a complete revision. It represents real progress in the manufacture of supplies -- progress tempered by the results of careful and patient tests.

The new catalog describes the new friction-drive extractors. The drive is noiseless and flexible. Power is applied so gradually that there is no strain on the comb.

Prices in the new catalog are essentially the same. Wax foundation is two cents lower. The heavy European demand for zinc for military purposes has had an effect on prices of queen excluders.

The new catalog forecasts Gleanings in Bee Culture for 1916. Features of the magazine will be practical special numbers on building, out-apiaries, wax production, advertising honey, and marketing honey.

The new catalog explains our connection with Airline Honey and shows how it benefits you. The information is interesting.

Write for the free catalog now. Remember the 3 per cent discount on January purchases.

New York
Philadelphia
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THE A. I. ROOT CO.
MEDINA, OHIO.

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TENNESSEE-BRED QUEENS

43 Years' Experience in Queen Rearing—Breed 3-Band Italians Only

	Nov 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested........	$1.50	$7.50	$13.50	$1.25	$ 6.50	$11 50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ .75
Select Untested	2.00	8 50	15.00	1.50	7.50	13 50	1.25	6.50	12.00	1.00	5.00	9.00
Tested...........	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9 00	17.00	1.50	8 00	15.00
Select Tested..	3.00	16 50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Bees by the pound, 1 lb., $1.25; 2 lb., $2.25; 3 lb., $2.75.
Nuclei (no queen) 1 fr. $1.50; 2 fr., $2.15; 3 fr. $2.75; 4 fr., $3.50; pure 3-band Italians,
Select queen wanted, add price.

Capacity of yard, 5000 queens a year—Select queen tested for breeding, $5.00
The very best queen tested for breeding, $10

Queens for export will be carefully packed in long distance cages, but safe delivery not guaranteed

JOHN M. DAVIS, SPRING HILL, TENN.

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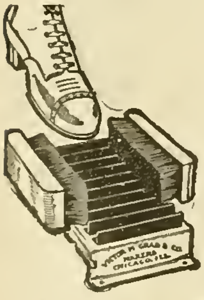

Give Your Wife a Surprise

When a fellow comes in from the barn on one of those wet days when most of the farm sticks to his shoes, it is almost impossible to get them clean with an ordinary scraper. Surprise your wife by placing an **Automatic Foot Scraper** at the back door. Mud, snow, dust and dirt will not be tracked over your floors if you use

GRAB'S FOOT SCRAPER

outside your door. The only device made which cleans bottoms and sides of shoe in one operation. Has ten parallel plates for scraping soles and two stiff bristle brushes which cleans sides of shoe.

AUTOMATICALLY ADJUSTS ITSELF

to any size shoe. Handsomely enameled. Looks neat. Can be rotated and swept under. Fastens to doorstep or any handy place Get one and save yourself useless work. **Price, $1.00.**

We offer the Bee Journal one year with foot scraper; both only $1.50

AMERICAN BEE JOURNAL, HAMILTON, ILLINOIS

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Remarkable Discovery that Cuts Down the Cost of Paint 75 Percent

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, and as durable as oil paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North St., Adams, N. Y., and he will send you a free trial package, also color card and full information, showing you how you can save a good many dollars. Write today.

"A Year's Work in an Out-Apiary" is the name of a booklet by G. M. Doolittle, the well-known honey-producer of New York State. He tells how he secured an average of 114½ pounds of honey per colony in a poor season. It is fully illustrated, and tells in detail just how Mr. Doolittle has won his great success as a honey-producer. The price of the booklet is 50 cents, postpaid, but we club it with the American Bee Journal for a year—both for $1.30. Every bee-keeper should have a copy of this booklet, and study it thoroughly. Address all orders to the American Bee Journal

American Bee Journal

THE IDEAL BEE VEIL

Oftentimes when out in the yard working with the bees one stoops over to pick out a frame, and as usual bees keep buzzing around one's head, watching for a chance to sting. The IDEAL BEE VEIL is constructed of cloth of wire, there being a cord at the top of the veil used to pull the cloth around the crown of the hat. The lower part also has a cord which fastens around the waist. The wire on the IDEAL does not strike the face and prevents the bees from stinging. It can be readily seen that a veil of this kind has the cloth veil far out distanced for comfort and utility. Sparks from the smoker does not burn holes in the IDEALS as the netting veil. The veil is manufactured by us and is recognized by the best and largest beekeepers as the most practical veil on the market.

Red Catalog, Postpaid - "Simplified Beekeeping," postpaid

Dealers Everywhere

W. T. Falconer Mfg. Co., Falconer, N. Y.

Where the good bee-hives come from

YOUR BEES ARE WINTERING

And this is, therefore, the best time for you to take up an inventory and send in your orders for supplies

Not only will you thus receive your hives, frames, supers, etc., in ample time to nail them up and prepare them for the spring, but you will also save 3 percent on the cost of these.

Early-order discounts for January, 3 percent; for February, 2 percent, and for March, 1 percent. It pays you to order now.

ROOT'S GOODS, WEBER SERVICE—The ideal combination

C. H. W. Weber Company

2146 Central Avenue, - Cincinnati, Ohio

KITSELMAN FENCE

Get It From the Factory Direct

HORSE-HIGH, BULL-STRONG, PIG-TIGHT

Made of Open Hearth wire, heavily galvanized—a strong, durable, long-lasting, rust-resisting fence. Sold direct to the Farmer at wire mill prices. Here's a few of our big values:

26-inch Hog Fence - 12 cts. a rod.
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Special Prices on Galv. Barbed Wire.

Our big Catalog of fence values shows 100 styles and heights of Farm, Poultry and Lawn Fence at money-saving prices. Write for it to-day. It's free.

KITSELMAN BROS. Box 85 **Muncie, Ind.**

First Lessons in Beekeeping.—A 190-page bee-book, well illustrated, and with attractive paper cover. As its name indicates, it is primarily for the beginner, but is useful as well to the experienced beekeeper. A general outline of the bee, its work, appliances for beekeeping, honey, etc., is given. Price, 50 cents, postpaid, or with American Bee Journal one year, only $1.00.

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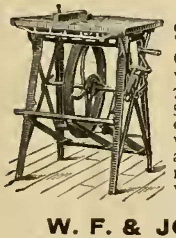
BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it."

Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

THE BOOSTER

In its current and coming numbers will discuss the following policies which constitute its platform of principles.

First—Uniform quality of product, honestly graded and attractively displayed.

Second—A system of distribution that will protect the local producer, and prevent flooding one district and leaving others bare.

Third—A system of crop reports that will give accurate, detailed, and trustworthy information as to crop conditions in all sections promptly and intelligently.

Fourth—An efficient method of presenting facts and reasons for the wider use of honey in cooking, in the arts, manufactures, and on the table, to the people who who would use it if they knew.

Fifth—An association of beekeepers who will carry these things forward to a successful consummation.

Are you interested in these policies? Wrap a quarter in paper and send it AT OUR RISK, and get these valuable numbers, and the rest of the good things for the coming year.

Address, THE BOOSTER, Redkey, Indiana

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Many have stated that the 1915 Lewis Catalog was by far the best bee supply catalog ever issued.

The New Lewis 1916 Catalog is still better than the 1915 edition, particularly in the illustrations, most of which will be found to be entirely new and of the finest work the engraver is able to produce in this line. As in previous editions, all descriptions and lists of prices are comprehensive and very plain.

This new Lewis 1916 Catalog is now out. If you have not been receiving the Lewis Catalog annually, send in your name at once and we will see that you get your copy promptly.

G. B. Lewis Company

Manufacturers of Lewis Beeware

Watertown, - Wisconsin

AMERICAN
BEE JOURNAL

Vol. LVI.—No. 1. HAMILTON, ILL., JANUARY, 1916 MONTHLY, $1.00 A YEAR

A System of Extracted Honey Production

Economy of Time and Labor an Important Consideration

IN order to realize the most profit from honey-production, it is important that the beekeeper eliminate unnecessary labor, for labor is the most expensive thing which he has to buy. If a man does all his own work it is equally important. Two things must be considered in establishing outyards, the honey-producing flora within reach and the time necessary to go from one yard to another. There may be other considerations, but these two will apply in every locality. After the general location has been selected there will be still a number of minor considerations such as convenience, ease of approach, protection from wind, etc.

When a man puts all his eggs in one basket, he should be very careful of the basket. Accordingly when a man decides to take up beekeeping as a business, he should use his best judgment in every detail. Too much care cannot be used in selecting the locations for the apiaries, for a very few miles may make a great difference in the honey-production which will be possible with a given number of bees. There are seven apiaries in the Dadant series, and only two of these can be depended upon for a frequent fall flow. During the past season all seven yards stored heavily from heartsease and other fall flowers, but it often happens that the only fall flow is from the two apiaries within reach of the Mississippi river bottoms.

The first outyards were established in 1872, and several have been maintained ever since that time. While the locality would support a large number of colonies in one yard during a good flow, the available fruit bloom is not sufficient for spring brood rearing. The flora that determines the number of colonies which may be profitably kept in one yard is not that which produces the main flow, but the intermediate bloom which keeps the bees occupied during the rest of the season. In most of the northern States, east of the Mississippi river, fruit bloom and dandelion blossoms are depended upon to furnish the nectar and pollen for spring brood rearing. The clovers, especially white clover, are the source of the main honey flow. In many localities there is a second flow from fall flowers. If the beekeeper is within reach of sufficient honey-producing plants to furnish necessary food supply during the interim between the clover flow and the fall flow, and also for spring brood rearing, there is little danger of overstocking his locality. In the vicinity of Hamilton these minor crops do not seem sufficient for more than about 100 colonies. When the number has reached as many as 120 in one yard there has been a decided reduction in the yield.

A SCREENED ENTRYWAY PREVENTS THE BEES FROM GETTING INTO THE EXTRACTING HOUSE

The automobile is the latest addition to increase the productive capacity of the beekeeper. Movable combs, comb foundation, the extractor, and now the automobile have raised honey-production from a mere fad to the dignity of a business worthy the attention of a man of high attainments. It is now easily possible to reach an apiary 10 or 15 miles away, do a good day's work and get home in time for supper.

It is important that apiaries be established where they can be left for a long time as it is desirable to have a honey-house and other conveniences that are not easily moved at each yard. Most of our apiaries have been established for many years, and since the owner of the land receives an agreed share of the crop, he is usually well satisfied with the arrangement. There is more interest on the part of the land owner where his rental depends upon the size of the crop, than where he receives a certain stipulated price regardless of

R 2 5 1918

A PART OF THE DADANT HOME APIARY

the success or failure of the venture.

During a heavy honey flow the beekeeper with five or six hundred colonies of bees will find it necessary to step lively with even the best possible arrangement. Not long since a publisher remarked to the writer, that he had thought his offices very crowded and felt the need of additional room, until an expert rearranged his plant, after which there was room to spare. The same principle will apply to beekeeping. The man who uses a good system of arrangement from start to finish will easily find it possible to care for a much larger number of colonies than would be possible with a careless arrangement. The position of the honey-house in relation to the apiary, the position of the extractor in the honey-house, the readiness with which tools and equipment can be reached when needed and similar small matters will make a great difference in the amount of work which can be done in a day. The elimination of a few unnecessary steps each day will make it possible for a man to care for another colony or two and add something to the sum total of the season's production.

AT THE SACK APIARY A FALL FLOW SELDOM FAILS

At each of the Dadant apiaries there is a tight building where supers and other necessary equipment are stored and where the extracting is done. An extractor is kept at each of the yards and the honey placed in barrels as fast as extracted.

Capping cans are used to receive the cappings. They are light and easy to move about, yet large enough to hold the cappings for an entire day's work. Since all wax is rendered at home the cappings are taken home at the close of each day. A number of cans are in use so that they may be left in the can long enough to drain thoroughly. Escapes are used altogether in removing honey, which greatly lessens the annoyance from bees. Even when escapes are used, if the honey is removed after the close of the flow, the bees will soon be trying every possible opening to find a way into the building and a screened entryway like that shown on first page will be found very effective in keeping them out. They go to that part of the screen nearest the honey-room, instead of trying to get in at the first door, while the men are bringin in the filled supers, the few who find their way through the first door rarely go through the second door.

THE HOLLAND OUTYARD

After the last extracting, some beekeepers pile up the empty extracting combs in the open air and permit the bees to clean them out. This is not good practice for several reasons; it encourages robbing at a bad season of the year and the bees damage the combs. We consider it much better to place the supers back on the hives in about the same proportion in which they were removed. If several are placed on one hive the bees will not go down again to cluster as readily as when only one or two are present. The supers are usually removed on a frosty morning when the bees are clustered below. It is annoying to find a lot of bees still in the upper super, as may occur when the supers are placed on the hives in big piles.

Our large hive has a brood-nest of sufficient size to furnish room for a very prolific queen to lay without crowding. The need of excluders is thus largely avoided. During the past season excluders were used on part of the hives at one yard because a few queens insisted on going into the supers to lay. Fourteen of the sixteen swarms which issued at this yard came from the colonies on which excluders were used. The use of excluders hinders the free movement of the bees between the brood-nest and the storage space above. This free movement is important if swarming is to be kept within bounds, as the above experience shows. With our large hives there is little trouble from the queen laying in the super if care is taken that no drone-comb be present immediately over the brood-nest. Our frame is about two inches deeper than the Langstroth frame, which adds greatly to the capacity of the brood-chamber.

THE MILLIKEN YARD—CLOVER IS THE PRINCIPAL DEPENDENCE HERE

THE POLAND OUTYARD

The accumulation of wax is no mean item in a large apiary. The cappings, of course, are the principal source of this product, but the small scrapings that are often thrown away amount to more than one would think. If a convenient container is kept constantly at hand in which to throw these bits of wax the beekeeper will find it worth while. Bur combs, propolis, scrapings and other odds and ends add to the total accumulation. In going over our apiaries of nearly 600 colonies the total was carefully weighed to determine the amount, and to our surprise more than 30 pounds of wax was secured from these remnants.

In rendering the wax it is important that the work be done very thoroughly. Few beekeepers are equipped to get all the wax, as has been proven many times by extracting considerable quantities from the slumgum which was supposedly clear. A second or third pressing nearly always pays, and even then it often happens that much wax will remain with the refuse unless good equipment is used.

The beekeeper who has never practiced the establishment of outapiaries, has little idea of the possible difference in yield between two yards only a few miles apart. These differences may be due to several causes. Woodland flora is quite different from that of prairie land, and although many apiarists hold that bees travel as far as eight miles in any direction, we have never had them go beyond three miles, and this only in such a direction as offered the greatest ease to their flight. Hills covered with timber offer more or less obstacle to their flight, and we feel quite positive that the longest flight of the bees is on an easy grade, up or down a valley. Winds, of course, probably also have an influence, as the breezes bring to the flying insects the smell of the blooming fields and also help them to get home after they are loaded.

We have often had apiaries as close together as four miles. As the vicinity of the Mississippi river is usually broken and more or less covered with timber, the apiaries within two miles of the stream have a variety of flowers. But those located farther have, on the other hand, a profusion of large pas-

THE LE MAIRE OUTYARD

THE KOCH YARD—ONE OF THE TWO YARDS WHERE THE FALL FLOW IS DEPENDABLE

LOADING HONEY AT AN OUTYARD

tures which may produce unmixed white clover in the spring and very ample persicaria bloom in August. The lowlands in the last days of summer are covered with Spanish-needles, also called bur marigold.

Some localities have so ample a production of honey-plants that several hundred colonies thrive in the same apiary. We know of two or three localities in Iowa where over 500 colonies are kept within a radius of three or four miles. These are privileged locations. The beekeeper must be the judge of the capacity of his district and act accordingly. It would be folly to establish outapiaries as long as our home location can suffice.

Dr. C. C. Miller's Personal Recollections

Life Story of America's Best Known Beekeeper

These notes are written at the request of C. P. Dadant. A carbon copy is also taken for my family; which accounts for their containing items of no interest to the beekeeping public. No care is taken as to literary character; merely the facts.

I was born June 10, 1831, at Ligonier, Westmoreland Co., Pa., about 50 miles east of Pittsburg. My father married my mother, Phebe Roadman, when she was 16, and I think it was something of a runaway match. Father was a physician, Dr. Johnson Miller, born in 1798. My mother was born 10 years later in Westmoreland Co., Pa. Her father and mother came from Germany. I think my father was born in New Jersey. Grandfather Miller, whose name was Charles, brought his family from New Jersey while the children were young. He was a tailor, and set his four sons at the same trade. It stuck with his sons Jacob, Coursen, and Charles, but my father ran too much to books, and became a doctor. The family had been Americans for generations, and I don't know their original nationality, although I think largely English.

When I was 10 years old, my father died after a short illness with pneumonia, leaving his dying injunction with mother that myself as well as my older sister, Lizzie, and my two younger sisters, Harriet and Henrietta, should have a good education. This injunction my mother carried out to the best of her ability. She spared no self-denial that we might have the best chance for an education. At the time of his death my father was silent partner in the firm of Hargnett & Miller, which ran a general village store. When the affairs of the firm were closed up quite a while after father's death, there was little or nothing left for the heirs; just why I don't know.

Dr. Miller in Boyhood.

My boyhood was a care-free, happy one. I went to school because I had to, but I had no consuming thirst for what I might acquire there. The taste for study was a matter of later growth. At first there was no public school; ours was a "subscription" school. But we had cousins some miles away who were attending a public school—"free school" it was called—and we children thought it must be a good thing, for what else could a "free school" be but one in which the scholars were free to whisper all they liked?

Even when the school became a public school, there was no change in the character of the school, and schools were not then what they are now. Spelling was well taught, better than now, and I have always been proud of being a good speller; but the same could not be said of any other study, although writing was a near second. We had no printed copies, and no steel pens. The "master" or the "mistress," as the case might be, "set" the copies and made or mended the pens, which were of goose-quills. There was no class in arithmetic. Each one did his "sums" independently at his seat, with perhaps an occasional scrutiny on the part of the teacher, and when he met an example too hard for him he took it to the master's desk to be shown.

No tasks were assigned to be taken home; when school "let out" in the afternoon there was no need to give thought to lessons until school "took up" next day. But there were six days of it each week; Saturday was the same as any other day. Neither was the monotony entirely unbroken on the Sabbath. In Sunday-school there were classes in their a, b, c's and a, b, abs the same as on week-days.

Though crude in some respects, yet in one respect the Sunday-school of that day was ahead of today. We committed Scripture to memory as we do not now; stimulated thereto by the hope of acquiring for a certain number of verses a bit of blue or red pasteboard with a verse of Scripture printed on it. One week I achieved 100 verses which I recited at Sunday-school.

When perhaps 12 years old, I spent two years at Laughlinstown, clerking in the country store of John G. Armor. For the first year I got $24, and $50 for the second year. I had my board additional, and my mother did my washing. Saturday evening I walked home three miles to Ligonier, and back again—I'm not sure whether Sunday evening or Monday morning.

Then I went back home, and to school. Later on I entered the office of Dr. Cummins to begin the study of medicine. The Latin terms were hard for me, and I thought I needed a term at the academy to help me out. Said academy was a private school with one teacher. The doctor urged that if I gave up because the reading was too hard, I would never develop a strong character. But I persisted and went. When I had finished one term I thought I needed about two more to make a finished scholar of me. By the time I finished the third term I had decided I would not stop until I was a college graduate.

I first entered Jefferson college at Cannonsburg, Pa. I took matters seriously, and devoted my time to study literally. That was before the days of athletics in colleges, and there was no requirement that students should take any form of exercise. Strange as it may seem, I actually didn't know that it was at all important to exercise. I had never before exercised, that I know of, although I had spent plenty of time in play. At college the only kind of play I indulged in was playing cards, which doesn't afford a great amount of physical exercise. The body of students as a whole was card-crazy. Quite commonly it was gambling, although the stakes were small. But I drew the line at playing for stakes, however small. I became quite expert, and then became tired of the game and quit.

I had no regular hours for study, but put in pretty much all my time in study. At night I studied until I became so sleepy I couldn't continue longer; then lay down and went to sleep. When I woke up I at once went to studying again, whether I had slept all night or only two hours. In the latter case of course I didn't study very long before I had to give up again with sleepiness. So it might happen that the night might be divided up into two or three sessions of study, but not generally. It might be thought that it would be troublesome undressing and dressing so often. I didn't undress at all. At the time I clerked in the store at Laughlinstown, I had a fine, big bed furnished me, with plenty of bedclothes. It was spread out on the counter, and in the morning rolled up and strapped together with a heavy strap, and then I lugged it upstairs, a barn-like place filled with bins of country produce. The stairs were winding, and none too wide, and the task of getting it up was almost beyond my strength. So, without saying anything to make trouble for any one else, I brought down merely the bedclothes each night, and with them I slept on the counter. It was at first a pretty hard bed, but I soon got used to it, and to this day no bed is too hard for me. With boy-like foolishness I went still further, gave up undressing, and used no pillow except my right arm. After I left Laughlinstown, I took to sleeping on two chairs—sometimes on three by way of luxury. This in winter. In summer I slept on the porch or anywhere that came handy. No bench was too narrow to serve; I never turned over in my sleep.

Dr. Miller When a Young Man

To return to Cannonsburg. In addition to bad habits regarding exercise and study, I boarded myself and had poor food. Before the year was out I had to go home. I made the journey home on foot, on one of the days covering 40 miles.

Although still in my teens, I taught a term in the public school of Shellsburg, and also in Johnstown, Pa., the place which years afterward suffered from such a terrible flood. Johnstown was then a much smaller place than now, and the school I had was made up of boys only, the larger boys of the place, and a pretty tough lot.

Instead of returning to Jefferson college, I entered Union college, Schenectady, N. Y., influenced thereto by A. P. Botsford, a graduate of Union who had married my oldest sister. The two years, junior and senior, that I spent there, were two strenuous years. It was all work and no play, for I had not yet learned the lesson that "All work and no play makes Jack a dull boy." In those days there were no college teams and no college games, and nothing to induce physical exercise. One of the leading interests of the students was their society membership. I was a member of one of the literary societies. Instead of being a member of one of the Greek letter secret societies, I belonged to the only anti-secret society.

[To be continued.]

* * *

Marking Section Honey

BY R. A. BURNETT.

We find great dissatisfaction on the part of the retailers where sections are marked "Not less than 10 ounces to 16 ounces," packed in the same case, *i. e.*, those that weigh 10, 11, 12, 13, 14, 15 and 16 ounces, should be packed by themselves, and not mixed in the same package or case.

Then, again, where sections are stamped "Not less than 10 ounces," while some of them run 16 ounces or more, the retailer finds great difficulty in selling them at their actual weight, as the purchaser says: This is marked 10 ounces, and you say it weighs 14 ounces. Now what am I to believe? Evidently it is going to resolve itself into each section being weighed separately and marked, Actual weight.

The question has been raised as to whether or not it is necessary to have the weight on a section of honey that is not in a carton?

There has been much said in Gleanings in Bee Culture on this weighing of sections, but this particular phase of it has not been mentioned so far as my observation has gone.

It is really a very important point.

While it is not necessary to have the weights marked on sections produced in the State of Illinois unless they are sold to go beyond the confines thereof, when sent to a large market like Chicago they are liable to go anywhere in the United States, thereby requiring compliance with the Federal Law.

Light weight sections and heavy weight sections packed by themselves sell to better advantage; thus it is a matter of self-interest for the owner to comply with this requirement. Many reason that some people want heavy sections and some want light sections, and that where a retailer only buys one case of honey it is necessary to have different weights in the case. That may be true in little towns, but it is not so in the city. Time here is calculated at so much an hour, and if the clerk is detained in selling a section of honey because of mismarking of weight, or the mark of a minimum, whereas it weighs much more, it militates against honey being sold or pushed for sale by the retailer.

Chicago, Ill., Nov. 22.

[Iowa and some other States have copied the Federal Law. To comply with the law in these States every section must be marked with the net weight, even though it is not shipped out of the community where it is produced. The actual weight should not vary more than an ounce or so above the weight marked on the section.—Editor.]

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THE EDITOR'S VIEWPOINT

Our Cover Pictures

The cover pictures this month show Dr. C. C. Miller and his family at home at Marengo, Ill. The first installment of Dr. Miller's life story will be found in this number. Note especially the row of basswood trees planted by Dr. Miller many years ago. They are the only linn trees in the vicinity of Marengo.

Food Value of Honey

The article on Food Value of Honey in the December number met with so much favor that we have arranged to issue a 16-page booklet containing this and similar matter. As soon as they are ready we will send samples to all who ask for them. The article is so popular that we have decided to issue 100,000 of these booklets which will enable us to sell them to beekeepers at a very low price. We hope to be able to make the price as low as $1.00 per hundred, postage extra. At this low price we feel very sure the beekeepers will find it profitable to distribute them in large numbers.

Productive Beekeeping—Another New Book

"Productive Beekeeping," by Frank C. Pellett. (Lippincott's Farm Manuals, $1.50.)

It is hardly necessary to introduce this author to our readers. Mr. Pellett is known as a naturalist, lecturer and beekeeper who came into the lime light only a few years ago, in Iowa, and has "made good." Valuable articles from his pen have been published by some of the leading agricultural magazines, and our readers know him most especially through the course of honey-plant descriptions contained in the American Bee Journal for the year past and still continuing. Mr. Pellett has been president of the Iowa State Beekeepers' Association and is still State Inspector.

Although the title of the book is very similar to that of Dr. Phillips' work, "Beekeeping," the contents are quite different. The study of bees and honey production covers so fertile a field that it is almost inexhaustible. Of course, in its main lines, each bee-book contains similar statements. But for an instance of the possibility of variation, although one or two bee-books mention laws on beekeeping, none other gives suggestions of the requirements of a good bee inspector and the necessity of securing a man who is already a good beekeeper and can impart what he knows to uninformed people. He impresses upon us the absolute necessity, if we are to get rid of bee-diseases, of informing every man who keeps bees, concerning the need of being able to treat disease himself. He insists that "we must make every man who keeps bees an up-to-date bee-man." In view of the seriousness of the question, this ideal condition should be strived for, even if we never entirely reach it.

His advice is sound. He does not launch into new, untried matters. For instance, after considering the races of bees and describing the leading kinds, he writes: "It is a pretty safe rule in the average American locality to depend upon the Italian, unless some other race has been successfully tried in the neighborhood. It is only fair to say, however, that no other race has been tried under such widely different conditions as has the Italian. It is possible that with an equal opportunity to demonstrate their good qualities, either the Caucasian or the Carniolan race may rival them for popular favor."

Pellett does not make any attempt at giving his reader elaborate anatomical descriptions of the honeybee. He treats rather of the "business of beekeeping and at once goes into the requirements of successful management on a large scale. Both comb and extracted honey production are considered, with the best and latest methods. In fact, he gives, in 320 pages, as much condensed information as may well be crowded in such a space. The book is well gotten up and the numerous cuts clear. The cut of worker-bees surrounding the queen is the best one we have seen.

The book can be had from this office on receipt of price, or with the American Bee Journal one year, both for $2.00.

Egg Development

"The Embryology of the Honeybee" is the title of a new work, of about 300 pages, by James Allen Nelson, Ph. D., expert in bee-culture investigations at the Bureau of Entomology of Washington, D. C. The book has an introduction by our well-known friend, E. F. Phillips, and is published by the Princeton University Press.

A work of this kind is out of the range of the education of the average apiarist. So it is likely that only a few of our subscribers, were they to read this book, could grasp its full value and understand its descriptions. But even the uninitiated in the study of embryology can appreciate the amount of work involved in such a treatise.

That Nature follows similar methods in the development of all living beings may be readily seen when comparing this description of the transformations of the eggs of bees with the descriptions given by Haeckel and others of the transformations of all life, from the lowest grades to the highest, from fishes to man, by the development of the single original cell into compound cells and "cleavage," until the most elementary forms have gradually changed into more or less intricate bodies. It is "variety in uniformity." We see how, by steady modifications, the outer layer of cells changes to exterior organs, while the inner layers of similar cells form the digestive and other inner organs.

The text of this work is accompanied by nearly 100 cuts and six plates. The latter were to us the most interesting part of the work, because they show, on a much enlarged scale (4¼ inches), the outer appearance of the gradually changing egg, from the moment it is laid in the cell until it hatches into a grub or larva.

We knew already that the big end of the egg becomes the head of the larva when it hatches, that the egg is not straight, but slighly curved, that it is laid in the cell with the small end down when it is not lying on its side, that it is fastened to the cell base by an adhesive secretion which accompanies it, that there is at the big end a very minute opening, a micropyle or micropylar area through which the egg is fertilized when it is to become a female, worker or queen. But we did not know that the convex side is to be the ventral part of the larva, the concave side being its dorsal surface. We learnt also that it takes a trifle over the three days usually counted to hatch the egg normally, approximately 76 hours.

The book shows deep study and profound scientific research, 86 authorities being quoted. We have no doubt that it will be read with great interest by embryologists everywhere.

Parthenogenesis

In the review of Dr. Phillips' book, "Beekeeping," I mentioned one point which I desired to criticise. It is perhaps a little presumptuous on the part of one who has never made microscopy a study, and whose notions of bee anatomy are entirely based upon the observations of others, to put forward a criticism of so able a student as our friend, but he knows that this discussion is prompted by a desire to obtain more light.

Dzierzon's view of parthenogenesis indicates that "all the eggs in the ovary are eggs which would normally develop into males, and if fertilization occurs the sex is changed to female." This view, clearly stated by Dr. Phillips, exactly describes the part of the Dzierzon theory with which he disagrees. His reason for doing so is that he has "found that many eggs laid by drone-laying queens fail to hatch and, in fact, are often removed in a short time by the workers." His theory is that some of the eggs are primarily destined to be males and others to be females, and that this ruling would agree with the general rule of nature. Then, to use his own words, "It is not improbable that the eggs (of an unimpregnated queen) destined to be female die for want of fertilization, while the eggs destined to be males, not requiring fertilization, are capable of development."

In my queen-rearing experience, it happened to us once, I believe it was in 1872 or 1873, that we found sale for seven first-class Italian queens, very late in October. The amount offered for those queens, by a lover of good stock, was so enticing, that we decided, my father and myself, to sell the queens, which were in very populous colonies, and take the risks of being able to replace them the same season. Queens were not then to be bought as readily as they are now. There were still many drones, as the season had been very prosperous and late. But those queens, hatched early in November, had no opportunity to mate, for the weather turned cold suddenly and the time of their rut passed without any opportunity for flight, even though drones might have been present. The following spring we found ourselves with seven very pretty and very prolific drone-layers. Their eggs were laid as regularly as those of fertilized queens, and their progeny hatched in the most uniform way, small drones from worker-cells and large, full-sized drones, from drone-cells. I do not remember that any of their eggs failed to hatch. True, some of them might have been removed by the bees, unknown to us, but this does not seem likely. The little drones appeared as able bodied as the large ones, and according to the Dzierzon tests must have been proportionally as good as the large ones. It goes without saying that we promptly replaced the queens with other breeding stock, and never did we have better early matings than that year, since thousands of drones were produced at a time when there are usually very few.

In addition to this experience, which leads me to believe that, in Dr. Phillips' cases, the non-hatching eggs which he noticed must have been due to other causes than want of fertilization, I feel somewhat skeptical over the possibility of two kinds of eggs in the ovaries. A good queen lays eggs that hatch as drones in every large cell she meets. She likewise lays worker eggs in every worker-cell. At times she avoids drone-cells. At other times she seeks them. We can readily understand that she may, at will or by certain natural motions, leave an egg unfertilized or cause the spermatheca to do its work. But how would she know, before the egg leaves its particular branch of the oviduct, whether it was of the proper kind to produce a worker? Why would the sex turn out worker almost invariably in early spring, and drone only after a long period of breeding? When we accept the elder Dadant's theory that the queen seeks drone-cells only when she becomes tired of the oft repeated pressure on the spermatheca, after having laid tens of thousands of worker eggs, we can readily understand her preferences in an active season of laying.

Those who claim that the Dzierzon theory is incorrect hold that the workers change the sex at will. This is going to another extreme. I had occasion to discuss this view lately in the Bulletin of La Suisse Romande, and found the educators with me.

However, we have much to learn yet. Should this modification of the Dzierzon theory prove true, we will need to change our text-books. C. P. D.

When a man like E. F. Phillips makes a statement, I feel like endorsing that statement, even if I know "'taint so." So when he modifies the Dzierzon theory I do not arise to dispute his correctness, but I may be allowed to state difficulties—at least questions—that may arise in the lay mind in adjusting itself to the modified theory.

Dzierzon says all the eggs in the queen's ovary are male. Dr. Phillips modifies that, saying in effect that there are male and female eggs in the ovary, the male eggs needing no fertilization, while the female eggs must be fertilized or they will not hatch; a drone-laying queen laying both kinds of eggs, but the female eggs dying because not fertilized.

The man who thus far in his beekeeping career has sworn by Dzierzon has been accustomed to think of all eggs as being alike up to the time of their being laid, by some process the egg being made female by fertilization when it enters a worker-cell, and being left male when a drone-cell is approached. (He may have thought that the will of the queen decided the fertilization when a smaller cell was entered, or that some sort of mechanical pressure acted. To the first of these views Dr. Phillips makes no reference, and dismisses the second, or the Wagner theory, by saying, "Since fertilized eggs may be laid in comb foundation when the side walls are only started and since drone eggs are often laid in worker-cells, this simple explanation cannot be accepted." But the Wagner man had accepted it by saying, "How do you know that when a very shallow cell, or no cell at all, is offered, there may not be a construction practically the same as in a worker-cell? and it's easy to believe that a cog might be slipped in a worker-cell, leaving a drone-egg there, or else that there was a shortage of the fertilizing material in the spermatheca.") But now he is to understand that the eggs are male and female from the beginning, and questions arise.

Is there some regular order in which the two kinds of eggs come, and if so what is that order? Is every tenth egg a drone-egg, or do a hundred worker-eggs, and then ten drone? Or is there no regular order? In any case how does the queen know which kind of egg is coming and which kind of cell to seek? In case there is no drone-comb in the hive except one spot in one of the outside combs, won't it hustle the queen to get there from a distant part of the hive each time a drone-egg comes?

Then, like as not, he'll go to figuring on special cases. The case where an empty frame is given to a strong colony well on in the season, there being no drone-comb in the hive. In 24 hours drone-comb will be built and 2000 or more drone-eggs deposited. As he understands it, there must be 20,000 worker-eggs mixed in with the 2000 drone-eggs. Does the queen lay the whole 20,000 in 24 hours? or how is it managed?

Until he has answers to these and other questions, he is likely to think the new scheme more difficult to understand than the old, and a good bit harder on the queen. C. C. M.

Drone-Laying Workers

In Gleanings in Bee Culture for Nov. 1, A. R. Clifton, of Capetown, South Africa, describes the temper of their native honeybees and adds:

"Besides their temper, many other unusual traits are exhibited. They are very prone to start fertile workers, and I have seen eggs laid by them while queen-cells and even fertile queens were in the hive."

Nil sub sole novum. Nothing new under the sun. This peculiarity of drone-laying workers, assuming this duty at unexpected times was accidentally noticed by the elder Dadant, years ago, as mentioned to us in a contribution to the June, 1915, number of the Swiss "Bulletin D'Apiculture." And while glancing over the pages of the first volume of the American Bee Journal, we found, page 138, June, 1861, the following from the pen of Samuel Wagner, its first editor and a remarkable observer:

"Freshly laid eggs have been found within four days after the removal of a queen, and Dzierzon records an instance where a fertile worker laid eggs in a hive which contained a fertile queen."

This accidental laying of eggs by drone-laying workers explains quite a few puzzles and sets at rest the assertion that the worker-bees can change the sex of the egg, by special food, made occasionally by adversaries of the parthenogenesis theory. The eggs laid by workers invariably hatch as drones, of course.

Requeening Colonies With Fertile Workers

"When introducing a queen by the smoker method, it is advisable to give a frame of brood in all stages to ensure success. Bees must be confined down to the brood-chamber only with a tight wood mat, and the quality of the smoke just right. A laying-worker colony was treated by this method this spring, and in 13 days the introduced queen had brood in three additional frames to the one supplied. Laying workers will accept no queen except by the smoke method of introduction."—J. S. Cotterell, in *New Zealand Beekeepers' Journal.*

Experiences differ. The Editor of the American Bee Journal has introduced dozens of queens to drone-laying-worker colonies without trouble, by the cage method, with 48 hour confinement. The experiences on this point came as follows: We often had to destroy hybrid queens to be replaced with better stock. Many of these queens were good and prolific, and we disliked to kill them. So we tried the experiment of introducing them to hopeless colonies with drone-laying workers. We never failed, and we ascribe the success to the fact that the queens thus introduced were in the best of health and prolificness. We concluded that it is much easier to introduce a queen to any colony when the queen is in first-class laying trim. The problem is to succeed in introducing queens that have been traveling two weeks or more and are both tired and non-laying.

Arabian Apiculture in the XIIth Century

The annual bulletin of the Algerian Association, "Nahla," published in Algiers, contains in its 1915 edition a very interesting account of the apiarian teachings of Ibn-El-Awam, an Arabian writer on agricultural subjects, living in Seville, in the 6th Century of the Mohammedan Hegira, which corresponds to the 12th Century of the Christian Era. This writer follows in great part the teachings of Aristotle who lived some 16 centuries previously.

This educator already recommended to clip the wings of the "king" (queen) with scissors, "in order that he be unable to fly away, for as long as the king remains in the hive the bees do no leave it."

He also taught that the males have no sting and take no part in the preparation of honey, and that the females (workers) kill them on account of their laziness.

He erred, however, in stating that the old bees have a very hairy body, and that the young bees on the other hand are smooth and hairless. It is exactly the reverse.

Influence of Nurse Bees Upon the Young Bees

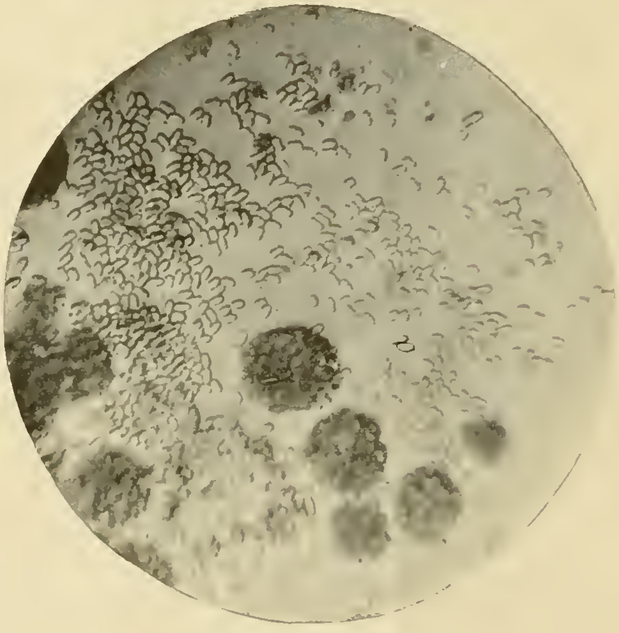
For some time past, the possible influence of nurse bees upon the temper or character of their nurslings has been discussed in the Swiss "Bulletin D'Apiculture." It is held by some that not only the young bees, but the young queens' progeny inherit to an extent the general dispositions of temper of the nurses who supplied them with the pap. Mr. Marguerat, in the October number of the above named journal holds, on the other hand, that queens reared in the same colony, from the same mother and at the same time, will produce workers showing entirely different dispositions in temper, activity, propensity to rob, etc.

If any of our queen-breeders have made experiments and observations upon this question, we would like to hear from them. It is a matter of interest to the entire beekeeping world and is worth investigating.

A Widespread Bee Disorder

The readers will remember that, in the September number, N. E. France, the Wisconsin State Inspector, made mention of a disease of the adult bees, which depleted colonies 10 to 15 percent. The digestive organs were swollen and full of brown-colored matter; the bees fell in the grass by the hundreds, never to return to the hive. About the same time, a similar trouble was noted in Washington. Concerning this, we have been handed a letter from Prof. Trevor Kincaid, of the University of Washington to J. B. Ramage, of North Yakima, President of the Washington State Beekeepers' Association. We quote from this letter:

"The cause of the malady is a minute parasite, not bacterial in origin, like most disease germs, but a small animal organism allied in nature to the parasites causing malaria in man and the



INTESTINAL WALL OF A DISEASED BEE MAGNIFIED ABOUT 500 TIMES
—Courtesy of Gleanings in Bee Culture.

'pebrine' of the silkworm caterpillar. The name applied to this organism is *Nosema apis*, this designation having been applied by a German scientist by the name of Zander, who first made a critical study of the cause of the disease. The germs attack the middle portion of the intestine, which is eaten away by the disease. The minute active spores of the parasite accumulate in the head of the bee, particularly about the roots of the tongue.

"The disease is spread through infected honey, according to Zander. Hives decimated by the disease are attacked by robber bees and the parasites are thus carried in the stolen honey from one colony to another. No appropriate common name has been suggested for the disease, although the term bee malaria' might very appropriately be used. The name 'Isle of Wight disease' has also been applied to it as it seems highly probable that our disease is identical with the malady that swept over considerable areas of Europe.

"As to the symptoms of the disease, they are striking, and you will not readily confuse it with anything else that destroys the bees. As soon as the disease attacks a colony, the bees will be found in a dead or dying condition upon a limited area of the ground immediately in front of the hive. When the attack is severe the ground may at times be fairly carpeted with dead bees. The insects seem to be unable to fly back to the entrance of the hive and crawl about until they perish, or until they are dismembered and carried away by the wasps.

"Considerable variation seems to exist in the susceptibility of the several hives in the apiary. Certain stocks seem to be relatively resistant. I have been keeping just a few hives for experimental purposes and for my own pleasure, and I find that of three that were attacked two were entirely destroyed while the third one recovered and is now in apparently excellent condition, with no bees dying so far as I can see. About the same story comes to me from the other beekeepers who have suffered.

"As to the distribution of the disease, I may say it has been reported from a number of localities in western Washington, and Dr. Phillips writes me from Washington, D. C., that it has appeared in several sections of the Middle West, notably in Wisconsin. It appears also to be present in California.

"While I was absent from the city about a month ago, my assistant informs me that some person from eastern Washington called on me to secure advice concerning a bee-disease, which from the description given is evidently the same thing as we have with us. I did not secure the name of the person or his address, but I understood he was from the Yakima district. I hope you are not visited by the malady, but it is safe to predict it will in due time make its appearance in all sections of the country where beekeeping is practiced.

"As to remedies, none have been suggested that seem likely to be effective. The prevention of robbing, together with the destruction of the hives seriously affected, seems to be a wise precaution. It does not seem likely that a suitable medicine can be fed to the diseased bees. Requeening from resistant stock will probably help matters out in the long run. I wish I could suggest something that would be more immediately beneficial."

The *Nosema apis* mentioned in this letter was described simultaneously in the American Bee Journal and Gleanings in Bee Culture, in November, 1909. In 1910, in the August number of the American Bee Journal, the present editor supplied information concerning the different causes ascribed at different dates to this malady. English scientists had discovered a bacillus which they called *Bacillus depilis*, and which they thought caused the disease. The word *depilis* was given because the bees attacked with the disease often lose their hairs and become shiny before death. Cheshire called the same disease "bacillus Gaytoni," because a Miss Gayton had supplied him with diseased bees.

Previous to the Zander discovery, the Germans also had described a micro-organism, which they called *mucor-mucedo*, and which is described in Thos. W. Cowan's book, "The English Beekeepers' Guide Book."

A similar disease, or perhaps more correctly several similar diseases of the same kind have been noticed in widely separated countries, in France as Mal-de-Mai, or vertigo, in this country as paralysis, from the North to the South, and from California to Florida. In Italy a similar sickness was given the same name as in France, Mal-di-Maggio. In the Province of Ancona, it made terrible ravages among the bees several times in wet springs. During our visit there, one of the most active beekeepers assured me that there was more or less of the disease apparent among the bees during the entire summer.

In the "Rucher Belge," May and June, 1914, a Mr. Bage described several forms of "fullness of bowels," which he called "refertum pollinis, refertum viscini, refertum dextrini, refertum nutriciæ." We wrote to this publication for more ample information, but the war was just declared and we have not only heard nothing from the editor of the "Rucher Belge," but do not even know whether he is dead or alive. If he reads these lines we would be glad to hear from him.

Now as to the remedies proposed: Mr. Poppleton, of Florida, sprinkles the combs and bees of the diseased colonies with powdered sulphur. This kills the diseased bees and they are carried away and a cure seems to result. The brood must be removed previously as the sulphur would kill it. It is a very heroic treatment. The Italians use a syrup made of honey diluted with hot water and in which herbs with tonic properties have been boiled, such as thyme, lavender, ginger, savory, etc. This is fed to the diseased colonies. The English do not seem to succeed in eradicating Isle of Wight disease, except by renovating and disinfecting their hives.

Dr. Zander recommends giving the bees salt water as a preventative and cure.

Mr. E. G Le Stourgeon, head of the Southwestern Bee Company, of San Antonio, Tex., says that in his opinion the disease is caused by excessive moisture. He succeeds in stopping it by shaking the bees of diseased colonies on dry combs.

Excessive moisture is usually present where the disease exists. The Isle of Wight, where it is most deadly, and its vicinity in England are very damp countries. In our locality, the disease is to be found, at its incipiency, after long, cold winters, when a wet spring follows. We often thought it caused by constipation of bees that had been confined a long time to the hive. In France, Italy, as well as in many parts of the United States, it follows spells of damp, unpleasant weather, that has confined the bees to the hive.

Whether *Nosema apis* is really the cause of this malady, or only an accompanying symptom may be ascertained after experiments which will require specific knowledge and must be conducted in special laboratories. *Nosema apis* has been found in healthy bees in small numbers, but this is not an evidence either way, since the causes of disease appear to originate throughout the world. It takes particular conditions for their spread in an injurious way.

A New Bee Disorder in Southern California

BY J. E. PLEASANTS.

THERE has recently appeared in a few apiaries in my territory a disease apparently of the adult bee. It also affects the larva to some extent. This at first caused it to be taken for European foulbrood. The adult bees lose all energy, crawl out of the hive, tremble and die. A colony becomes gradually weaker and weaker, somewhat as they do in paralysis. But we have been unable to find any in the swollen condition as in paralysis. One beekeeper told me that his had acted somewhat as though they had been poisoned, rolling out of the hive, quivering, and soon dying. In some hives there would be dead bees an inch deep. But as there is no evidence or any way of their being poisoned, I think it is just symptoms of the same disorder.

Mr. John F. Green, who first called my attention to the trouble, is recently from New York, and has had a great deal of experience with European foulbrood. He is convinced, as I am, that this is something entirely different from either that disease or paralysis. Mr. Green and I spent several days among the apiaries showing the symptoms just described, and he told me he had tried all means in his power to check the disease. He has caged the queen, requeened, etc., and while in some yards he had good results, in others all efforts resulted in failure. This would show that the fault does not lie with the queen, as the same stock of queens would help in some instances and fail in others. Mr. Green's No. 3 yard is only about a mile and a half from No. 7, but over a mountain. No. 7 is badly attacked by the disease. No. 3 is in the finest condition of health.

This disease seems to be similar to

the disorder described by Mr. Calcutt, of Seattle, Wash., and Mr. Miner, of Fowler, Calif., in Oct. 1 and 15, Gleanings in Bee Culture. This is also mentioned in the same numbers of Gleanings as having appeared for some years in the Mississippi Valley States.

Now, while I am sending samples to Dr. Phillips, I would also like to ask information from any one who has had any experience with the disorder. Can any one give the symptoms of Nosema? Are the symptoms similar to this? We noticed the presence of the yellow-jacket wasp around all the hives infected, as others have in different localities. This has never been noticed in any other disease.

We have made an encouraging gain in our fight with European foulbrood here, though I thoroughly agree with Mr. Byer that it is a much more serious trouble than American foulbrood. For one reason, we know exactly how American foulbrood is carried, and that is the whole battle in prevention. And even if you get it, it is easier handled, but we now seem to be "up against" something new, and any light on the subject will be most thankfully received.

Our weather conditions have been excellent during the early winter. We had two good rains and very mild clear days following. The bees are, of course, gathering no nectar at this season, but are bringing in large quantities of pollen from Artemisia bloom.

Orange, Calif.

No. 13.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(Photographs by the author.)

THE white clematis, *Clematis virginiana*, is commonly known by the name of virgin's bower, but also has several other local names such as love vine, traveler's joy, and Devil's hair. Figure 62 shows the delicate white blossom and the leaf, and No. 63 shows a mass of the vines on a roadside fence.

The range of the plant is from Nova Scotia and Ontario west to Lake Winnipeg and Nebraska, and south to Louisiana and Florida. It may be expected almost anywhere east of the Mississippi river. It is a slender climbing vine growing on the borders of woods, roadsides and hedgerows. The blossoms are white and fragrant, blooming in midsummer. It is much sought by the bees, and apparently produces considerable nectar. It is doubtful whether the plant is anywhere sufficiently abundant to make an appreciable difference in the production of the hive.

Richter, in his "Honey Plants of California," reports a related species, the hill clematis, *Clematis ligusticifolia*, as common in the hilly districts almost throughout California. It is said to produce "a great deal of pollen and probably some honey," but it is not known to produce a surplus.

IRONWEEDS.

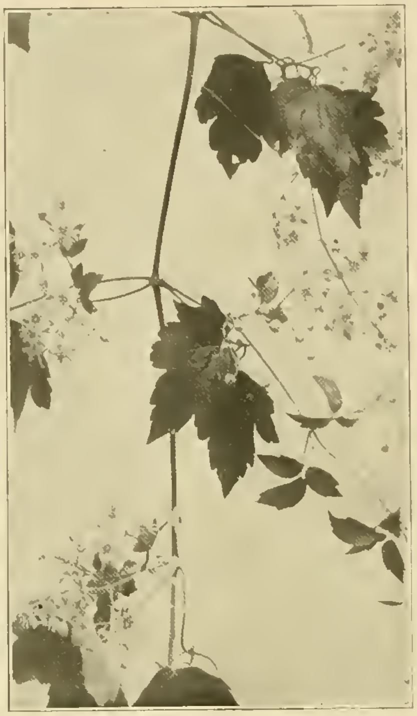


FIG 62—WILD CLEMATIS BLOSSOMS AND LEAVES

There are many species of the ironweeds to be found in many countries. They are common in Asia and Africa as well as North America. They are common from New England south to Florida and west to Dakota and Texas. Figure 64 shows the flowers of the western ironweed, *Vernonica fasciculata*, and No. 65 a clump of the common ironweed, *Vernonica baldwini*. In the middle West they grow very commonly in pastures, and the purple blossoms are very conspicuous in late summer. The writer includes them among the honey-producing plants with some hesitation, although the bees work upon them to some extent. Since they are frequently reported in this connection they may be of more value in other localities than local observation indicates.

Atlantic, Iowa.

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A Visit to the Sage of Marengo

E. G. LE STOURGEON.

MARENGO! There are few beekeepers who have not felt a sort of grateful warmth at the mention of the name that has become famous to us as the abiding place of one of the kindliest and most loving of the host of kindly souls that have made the keepers of bees a peculiar people. When my duties brought me as a casual visitor to the office of the American Bee Journal, and its earnest young manager, Mr. M. G. Dadant, mentioned the fact that he was contemplating a visit to Marengo, I at once plead to be permitted to accompany him. I could not have hoped for such good fortune when I left my far off Texas home and was thrilled at the prospect.

If I had created in my mind an idea of Dr. Miller as an *old* man; if I had pictured the Sage of Marengo as one who, conscious of his years of labor and of his success and fame, had shut up his mind to suggestions from humble fellow workers; if I had expected any hint of egotism or intolerance; if I had felt that one in his station and at his age might be excused for a show of impatience with the ignorance of others—I was riding to a fall! My anticipation of the pleasures of the visit had not in any wise prepared me for the warmth and kindliness of its actuality.

We reached the pretty little town of Marengo about noon. We had been told that our friend lived some three miles from the station, and were preparing to hire a conveyance. Mr. Dadant rang up the Miller home to advise them of our coming, and learning that

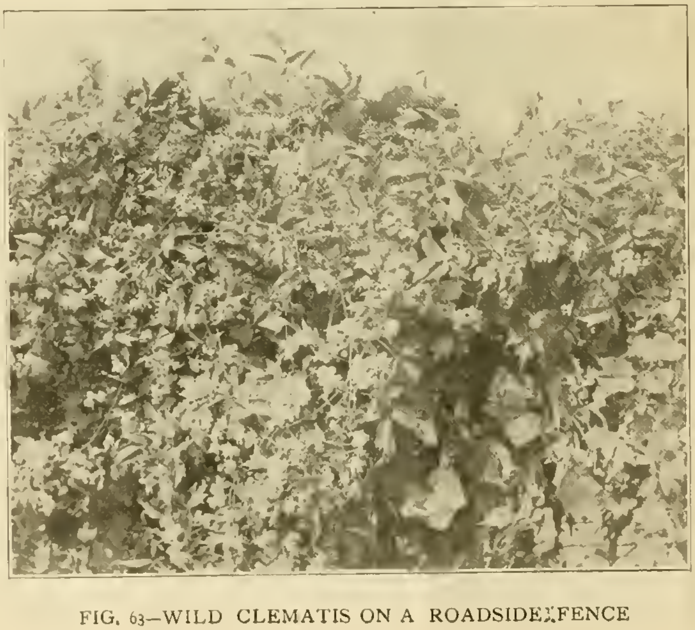


FIG. 63—WILD CLEMATIS ON A ROADSIDE FENCE

it was only a mile, we determined to walk. We asked only the general direction as we wanted to see which of us would first recognize the place from the pictures we had seen. Hastily eating a lunch we set forth, and it was our great surprise, after going but a short way, to hear the cheery hail from an approaching buggy, and to look up into the smiling face of Dr. Miller himself. He had hitched up and come to fetch us with that hospitality that marks his every action toward his guests.

Could this smiling, boyish figure be the great Dr. Miller? Far beyond the four score mark, a man who knew and advised with our grandparents, one of those first adventurous spirits that pushed the genius of the new ideals of America across the Western Reserve when Chicago was only a frontier outpost of the far, far West, and yet so full of the spirit of youth that his years fall from him like a mantle, and almost instantly a feeling of fellowship springs up in the heart at the infection of his smile.

"Come, get right in here. There is room enough. Each of you give me a knee. I will sit upon your lap," and laughing and chatting like three boys upon a lark, we are driving down a beautiful village street toward the country.

The Miller home is back from the road upon a hilltop that gives a view across the rolling hills, clustering trees and fertile valleys checkered by farms and orchards and patches of meadow ground. The drive is a noble avenue of basswood planted by Dr. Miller himself, and, he told us, the only basswood in his vicinity.

To younger men, and especially to us in this newer Texas land where I was born, there is a feeling of awe when a man points out to us a row of stately trees, and says, "With my own hands I planted them;" when in the orchard he can say, "This tree bears two varieties of fruit, *forty years ago* I grafted it." How much more striking when such statements come from a mouth wreathed in a boyish smile, and clear bright eyes twinkle from a sunny pink-cheeked face that belies the well trimmed fringe of a white beard.

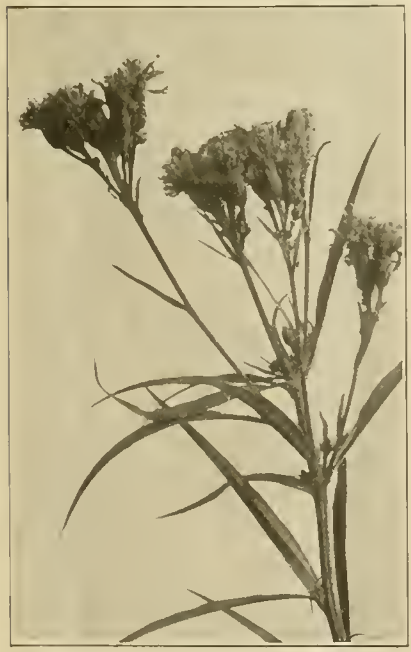


Fig. 64—Blossoms of Western Ironweed

Dr. Miller is remarkably agile and sprightly. In explaining to us how and why he cleated the ends of his hives he demonstrated by quickly stooping down and picking one of them up almost shoulder high where he turned it about for our inspection. He uses much more entrance space for his bees than we do in the South, and when it was remarked upon, he at once got down on the ground to point out to us the reasons why and to show the bees clustering beneath the frames. His movements have all the swing and spontaneity of a man less than half his years.

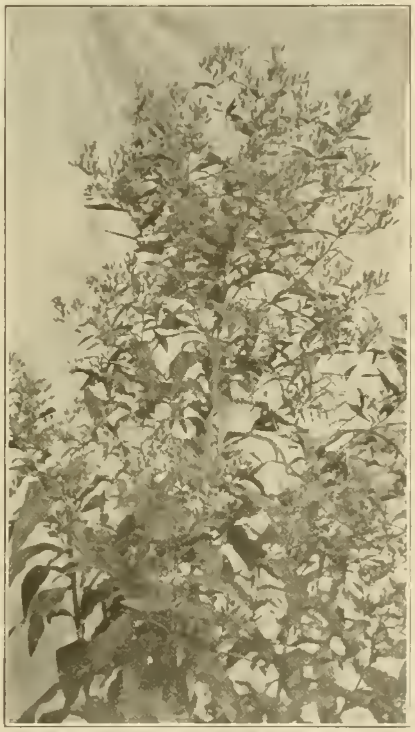


Fig. 65—Clump of Common Ironweed

Upon arriving at the house we were met by a welcome that gripped the heart with its warmth and cordiality. Some one has said that back of every successful man there is a woman. No wonder then that Dr. Miller shines so brightly in our sky, for back of him are *two* women. Mrs. Miller and Miss Wilson are no less interesting than the Doctor. The thing that struck me the most was the smiles on every face. I have heard of women afraid to smile for fear of causing wrinkles. I prescribe for any such a visit to Marengo, and a half hour chat in the sunny sitting room with these two beautiful bright-eyed women.

Dr. Miller's family are great lovers of sunshine and of nature. They bring these things into their home life both figuratively and literally. The favorite room is one with large bow windows opening to the South. When we were there the golden Indian summer sunshine was streaming into the room through the fronds of many varieties of ferns that grow in the window seat and from hanging baskets in the alcove. One cannot imagine a cozier place, nor a happier one, as we saw it mellowed by the merry jest and quiet laughter of these old-young people.

Dr. Miller's work is not done. We ventured to make suggestions relative to a certain book, yet uncompiled, that will be, when published, of greatest interest and moment to the beekeeping world, and it was good to see the earnestness in his manner as he noted and weighed our views and spoke of his future tasks and future hopes. Like all great souls he is unaffected and modest. He does not underrate his work nor its value to his beloved vocation, but he assumes no boastfulness nor egotism concerning it.

These, then, are the three impressions most vividly made upon me by my visit to Marengo:

Youth—The springing font of age, that frugal living and honest labor has secured for our great teacher.

Cheerfulnes—The bright and ever shifting smile that radiates from Dr. Miller's face and is reflected back upon him by all with whom he comes in contact.

Earnestness—The modesty of his bearing and absence of pride or boastfulness, underlaid with a feeling of consecration to a work that he knows to be of value and of aid to others.

San Antonio, Tex.

[While Dr. Miller is always courteous to visitors, we know that the demands on his time are many, and that his work taxes his strength to the utmost. He found it necessary to discontinue answering questions by mail, several years ago, and his age forbids inviting every beekeeper that comes by to visit him, much as he would like to do so. We write this footnote to caution our readers against imposing upon Dr. Miller's generosity with no other reason for a visit than the desire to meet our old friend at home. "A word to the wise is sufficient."—Editor.]

Clean Section Honey

BY FRANCIS JAGER.

THERE is no doubt that the greatest obstacle for obtaining a good price for comb honey is the dirty condition in which the sections are put on the market. We have now national grading rules which call for sections *free* from propolis for fancy and No. 1 grades. This is one good point for which all honor to the National convention at Cincinnati aside from other points on grading comb honey, which should have been left over for another year or two for wider discussion before being adopted.

But why limit cleanness only to fancy and No. 1 grades? It hurts the honey trade if *any* sections get to the market in a dirty condition. Most of the comb honey marketed at present looks more or less stained and unattractive on account of propolis.

I noticed in the American Bee Journal an article by Frank Rauchfuss, saying that propolis stains on wood cannot be removed entirely. Yes, they can, and quickly and cheaply, too. Not only they can, but ought to be removed.

There is an easy and cheap way for cleaning the sections. The Minnesota Beekeepers' Association will testify that section honey of all grades *can* be put on the market in sections as clean and white as when they come from the factory. Such section honey was on exhibit at their December convention in Minneapolis.

When sections are removed from supers, the coarse propolis is first scraped off with a small sharp knife from the outer sides of the section with one or two strokes of the knife to each side. The four edges are then scraped, with the point of the knife, protruding from between the thumb and the first finger just far enough to clean the edge of the section and not injure the cappings. In the same manner, with the point of the knife, the propolis for about ⅛ of an inch inside of the section may be removed. One can soon learn to do this without hurting the cappings or dropping any into the cells next to the wall.

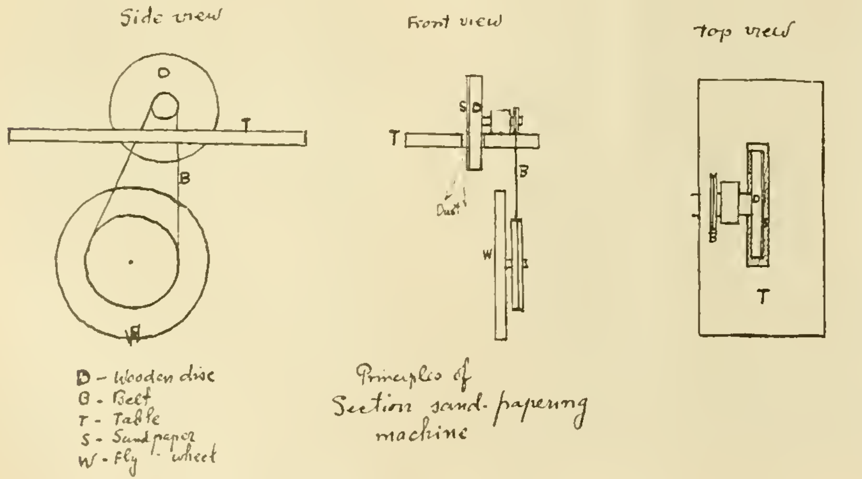
This, however, is only preliminary work. The sections must now be *sandpapered*. A simple sandpapering machine which every beekeeper can afford is used for this purpose. By foot power a round wooden disc, one foot in diameter, is put into rotary motion. On this disc is attached a sheet of sandpaper of the same size as the disc. Three tiny nails near the outside of the disc will hold the paper firmly in position. Now a board is fitted in, about one-third from the bottom of the wheel, in such a manner that the sand wheel will revolve in a slot, with two-thirds of the wheel above and one-third below the table formed by the board. There should be a quarter inch space between the face of the sandpaper and the board through which to convey all dust below the table.

After starting the machine, take a section in your right hand, lay it side down on the table and just touch one side (the dirtiest) against the sandpaper. In a fraction of a second it is as clean as new. One, two, three, four, and the outside of your section is clean. Set your section now upright; touch the edge of the section against the sandpaper; turn it around and do the same with the opposite edge. You can do it as fast as you can count one, two, three, four, five, six. In this manner all sections, fancy, No. 1, culls and all, can be made attractive and marketable; the wood will look as clean as new.

One sheet of sandpaper will clean a hundred sections. It would help the honey trade if such a section polishing machine was put on the market. Number 1 comb honey in sandpapered sections was sold at Minneapolis at $4.31 per case, or nearly 20 cents a pound, when plenty of daubed section honey could be bought on the market at 12 cents. The sandpaper machine used by the writer cost $10.

College Farm, St. Paul, Minn.

[Section polishing machines have been described from time to time. Probably too little attention is paid to this subject. The machine above described is certainly very simple.—Ed.]



PROF. JAGER'S SECTION CLEANING MACHINE

Swarm Control in South Texas

BY HENRY BRENNER.

At the beginning of February we go through the apiaries to see if the colonies have enough stores to start brood-rearing which takes place about this time in apiaries along the river courses. Weather conditions, of course, determine the exact date. We have had many cases where brood-rearing started as early as Jan. 15, and sometimes, if about Feb. 1 we have wet or cold weather, brood-rearing starts a little later. February 1, is about the time that it generally starts. In this latitude there is practically no cessation of brood-rearing at any time during the winter. There is seldom a time when no brood is being reared in the colony. But by brood-rearing, as the term is used above, we mean regular operations of the bees in building up the colony for the spring flow.

At the initial visit to the apiaries at this time we do not disturb the brood-nest or break up the cluster, but if we find a colony with light stores we give it a frame from another colony that can spare it. We do not put this honey in the brood-chamber however, but we put it in the super above the brood-chamber. If no colony in the apiary has stores that it can spare we fill empty combs with sugar syrup and some honey added which is just as good for brood-rearing, only it does not last so long and we have to give more than if we gave sealed frames of honey. Generally we put in two or three frames according to the amount of brood and the strength of the colony. Even at this early date quite a bit of pollen can be gathered from early bloom and some nectar is beginning to come in. In our apiaries in the prairies and away from the river we start work two weeks to a month later than in our river apiaries.

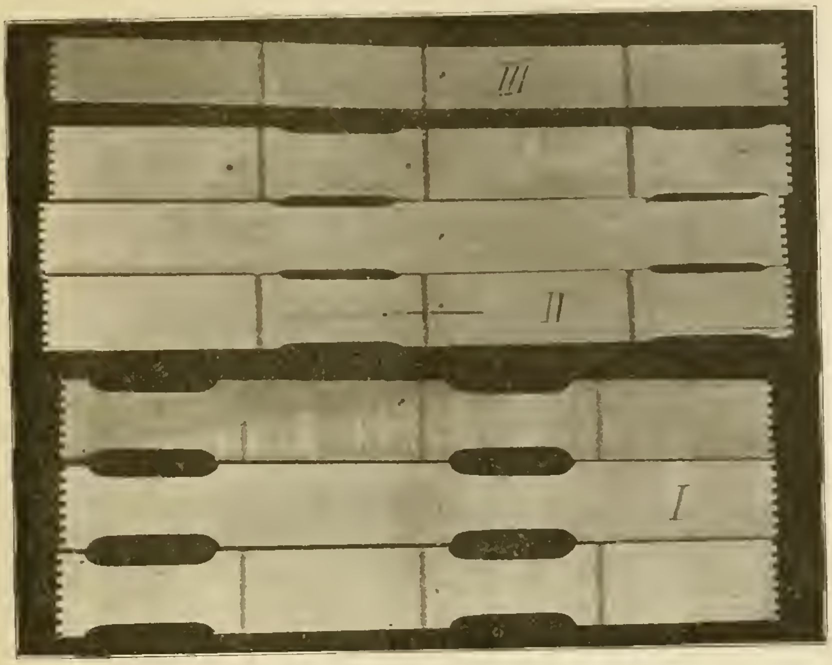
At the end of February we see whether the queens have enough laying room. Should they be crowded we remove the honey from the brood-nest and replace it with empty combs. It is not wise to break up the brood-nest even then, but we put the empty combs on each side of the cluster, and if they have frames filled with honey we raise them into the super. At this time we mark the colonies having drone-brood as they will be the ones likely to cause trouble in swarming. Only about 10 percent will show the swarming impulse. At every visit it is well to see that there is plenty of honey and to equalize stores from the richer hives.

At the river apiaries our bees could winter with practically no surplus stores if they could fly every day because there is always something in our valleys on which they could feed. It happens some years that we have periods of cold and wet weather in the early spring, and if we have not provided stores the bees will drag out the young brood and contract the brood-nest to two or three frames. They do this, not because the weather is too severe for brood-rearing, but because the bees fear famine.

In early March, if we find as many as six frames of brood in the brood-nest, we raise one frame of brood out of the center of the cluster into the super and replace it with an empty comb. Our experience is that if bees confine their brood-rearing to the lower story, even though they apparently have plenty of room there, they are more likely to contract the swarming fever, and our object in thus early raising a frame of brood to the super is to encourage the queen to extend her operations to the two bodies.

The few colonies which we had marked as having drone-brood we now look over carefully to find if there are eggs in queen-cells or if new queen-cups are being formed. If we do find them, we spread the brood about over the hives and, of course, destroy the queen-cells. The amount of spreading depends upon the strength and condition of the colony. If the brood is spread too much and a cold night occurs too soon after the spreading there is loss from chilled brood. Some colonies seem to have a passion for brood-rearing and go far ahead of the ability of the colony to protect and cluster the brood.

After the brood has been spread in colonies that have shown an inclination



DIFFERENT TYPES OF SECTIONS

to swarm, it is well to reduce the entrance for a few days to keep out the cold air.

Ten days later we look again over the colonies that had the queen-cells started. If the bees do not appear to have given up the swarming notion we place the queen on one frame of brood in the brood-chamber and fill up with empty combs or full sheets of foundation. The balance of the brood we put in the super over a queen-excluder. Should there be too much brood we give the surplus to other colonies, or if it is not desirable to weaken the colony, we place more than one frame in the lower story with the queen. Any colony found with nine frames of brood or more in the early spring may be treated in the same way with good advantage whether it shows the swarming impulse or not. About nine days afterward we look over the brood above the excluder for queen-cells which we destroy.

Every year we find a case or two of a young queen laying in the super above the excluder, where we have missed a cell, but no harm was done in such cases. The excluder between the two queens prevented the issuance of a swarm. One of the queens should be removed, however, prior to the honey flow.

During swarming time we go over the yard in this way three times, at intervals of nine or ten days, and in our home apiary we have not had a swarm for the last five years. In our outapiaries we have had one or two swarms for lack of time or because of neglect.

A beginner must exercise caution in spreading brood in early spring. Should the brood-nest be too much extended more harm than good is likely to be done.

We do not make a practice of clipping queens; that is to say we never hunt for the queen with the object of clipping her wings, but whenever we find a queen handy we clip her with a pocket knife and mark the hive with the date. Then, should we find next year an unclipped queen in that hive, we have no fear of swarming and the manipulations described above are practically unnecessary. This is in fact the sole advantage we find in clipping the queens at all, and the only reason we practice it. Without a knife and pencil, however, we never do any work in our apiaries in the spring.

The reasons for swarming are want of room, age of queen, too much heat, too much surplus stores, too many bees, or excess of brood.

Any colony before preparing to swarm will always rear drone-brood. If no drone-comb is in the brood-nest you will find drone-cells in among the worker-brood. Should there be no drone-brood, it is an indication that they have a young queen and there will be no danger of swarming. This colony may be left alone safely on subsequent visits to the apiary.

Segnin, Tex.

Naphthaline as an Insecticide

BY DR. A. F. BONNEY.

FROM my first experience with bees I was not satisfied with bisulphide of carbon as an insecticide, as the vapors are very explosive, dangerous to inhale and extremely fugitive. I was on the outlook for something without these disagreeable features, and I have, I believe, found it in naphthaline, to which I gave a thorough test in the summer just past by using nothing else in my yard, with the result that I did not lose an ounce of comb, although there were several piles of hives filled with brood-comb exposed out-of-doors from the middle of May until well into June. To make more certain I purposely exposed a sheet of brood-comb, then removed it to the honey-house, put it in a pasteboard box with a couple of small balls of naphthaline and never saw a worm.

Naphthaline in the form of little balls is called "Moth Balls," and is used by housewives to repel moths from fur garments. It is also known as "Tar Camphor," for in a molded mass it much resembles gum camphor physically. Naphthaline is a benzine hydrocarbon with a chemical formula of $C_{10}H_8$; it forms white crystalline leaflets, has a peculiar and not disagreeable odor suggestive of coal tar, volatilizes at all temperatures above freezing and more rapidly the warmer it gets; melts at about 155 degrees Fahr. Its vapors kill most fungi and most insects.

A curious thing about this substance is that if a hive is full of the odor and there is honey in it the bees will go in and do not seem to mind the smell nor suffer any inconvenience. It may not be poisonous to them, or it may take prolonged exposure to the drug to cause death in any insect or its larva.

Just now the price of naphthalene is high compared with a year ago when it was abundant at 7 cents wholesale, but even at 30 cents, the present price, it is a cheap germicide for the beekeeper, as a couple of naphthaline balls weighing about one-fourth of an ounce will protect the combs for weeks if not months. It is molded into balls, so it may be put into any shape by heating in a tin dish set in boiling water. Little sheets or cakes weighing half an ounce would be a good size, and molds can be made of thin pieces of wood, which must be wetted when used.

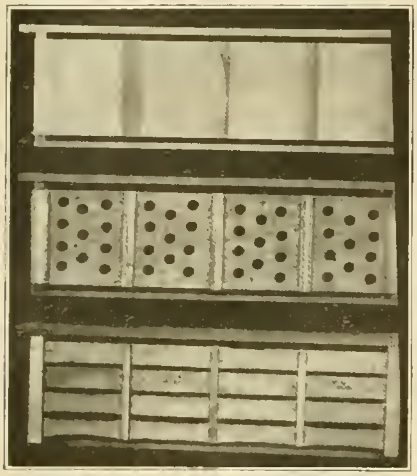
Buck Grove, Iowa.

[Naphthaline is splendid to repel insects, but will not drive them out once they have become established. We have no doubt that moth balls would protect the combs perfectly if used before the eggs are laid. Once the combs become infested we very much doubt whether the naphtha will kill the mothworms or drive them out. If the beekeeper would take the precaution to keep naphtha in the boxes where unused combs are stored there would likely be little damage from moths. The past season's experience would hardly be conclusive, in the use of this drug for the wet cool weather has been unfavorable to the moth.—EDITOR.]

Sections and Dividers (Separators)—Are They Perfect in Construction?

BY F. GREINER.

DURING the past 30 or more years the beekeepers and the supply dealers of our land have exerted themselves to the utmost and have so perfected the accessories we need for producing comb honey in the best possible shape, that we might say the desideratum has been reached. If I take it upon myself in the following to point out where other slight improvements may be made it is because it sometimes takes many years of experimenting, testing and trying to find out one wee little fact, and my experience shows where certain slight changes could be



Different Styles of Separators

made to the advantage of the honey-producer and his product.

The one-piece 4¼ beeway section is the one most commonly used. When it was first originated the beeway was cut ¼ inch deep, thus making the top part 1½ inches, the sides 2 inches; in other words, maintaining a difference of ½ inch in the respective widths. The difference between top and sides, when the section was made of four pieces, was only ⅛ inch, which was sufficient, and also just accommodated the glass used in glassing our sections at this early time. It has always been a puzzle to me why, when the one-piece section was adopted, the depth of the beeway (*inset* as it is called by some manufacturers) was increased.

Since 1885 I have had the beeways cut ⅛ inch deep in all my sections and found this depth sufficient; seeing no reason today, after 30 years of extensive beekeeping, to make any change. It is the best, because it protects the honey produced the most; but when I order sections to be thus made, I have to pay usually a little extra for setting machinery. A few years ago some 4¼ sections were shipped me with beeways ⅜ inch deep, as shown in my illustration No. 1. This was very bad, and has been objected to by every one who came to me for sections from that lot. I have still a small stock of them on hand.

Number 2 in the illustration shows a section with properly cut beeway or inset ⅛ inch deep.

Number 3 shows my no beeway or plain 4x5x1½ sections. I am using these in my wide frame supers of which I have several hundred in use. These wide frames are provided with fences or cleated separators of different pattern, some of which are shown in my second illustration. In the first place I wish to draw the attention of the reader to the cleats and their different widths. The cleats on the lower frame are only ¼ inch wide; the cleats on the middle frame are ½ inch wide; those on the topmost frame are ¾ inch. Having used them side by side in the same super, I believe I can judge now which is the most satisfactory. When the fence or cleated divider of any kind was first talked of the width of the cleat was under discussion in the Bee Journals, and as I favored the wider cleat, I built the separators that way. At the same time I built a few with ¼-inch cleats. Later I bought many regular Danzenbaker fences as shown in illustration, lower frame, and still later I made up perforated cleated separators with ½-inch cleats. The result of my observations is this: The ¼-inch cleat is not as satisfactory as the wider cleats. The better the sections are filled the oftener we find the sealing at the edges drawn clear to the separator and attached to the cleat. Removing the sections from the holders breaks the sealing along the edges and a leak is the result.

I would not say that this ruins the honey for shipping, but it is at least a drawback. The ½-inch cleat is as wide as necessary to prevent all trouble here spoken of, and is therefore to be preferred. With the ¾-inch cleat we gain no more than we do with the ½ inch, and we take into the bargain the undesirable more meager filling. In other words, the face of every section filled in supers with the wider cleats shows a wider depression near the sides. So I prefer for best result the ½-inch cleat whether used on fences or solid separators.

Grave doubt still lingers in my mind as to whether the freer communication the fence gives to the bees as compared with the solid separator is of any account. The Betsinger wire screen separator may be superior because of the very free communication it affords, but I have not discovered any advantage in favor of the fence as against the solid or perforated separator in that respect. I believe almost every honey-producer has found the fence to be a short-lived affair, whereas the solid separator lasts as long as it is taken care of. My illustration shows how bees will often enlarge the spaces of the fence. Comb honey built between such damaged fences presents an undesirable washboard appearance. I have had to discard quite a few fences on this account, particularly such as were made from very soft timber. If fences were made from hard wood or semi-hard wood, like soft maple, elm, etc., as I have suggested before, there would be no trouble, but they would then cost more.

Naples, N. Y.

Honey-Plants of Cuba

BY D. W. MILLAR.

THROUGH the courtesy of Dr. I. Juan T. Roig, Chief of the Department of Botany of the Experimental Station of Cuba at Santiago de Las Vegas, I give the following information about the flowers, pictures of which I enclose:

No. 1. Panel of Campanilla honey with flowers around it. These flowers are Campanilla Blanca (white bell-flower) or Aguinaldo, the famous plant from which our choice honey is produced, sometimes called Miel de Pascua or Christmas honey on account of its being harvested principally in December. These Campanilla vines spring up wherever there is a clearing and bloom yearly without re-seeding.

No. 2. The Guayaba (Guava) is a bush and is about the worst pest we have. It springs up in pastures as soon as cleared, and is very hard to kill. The picture shows the bloom and fruit, both picked from the same bush at the same time. I have seen reports of its being a great honey-producer, but my observations would not confirm this. It is principally renowned for the jelly made from the fruit.

The red Coralillo (*Antigonon leptopus*) originating in Mexico, is cultivated here. It blooms every day in the year, and is the greatest honey vine I know. It is covered with bees at all times and all day. I have planted hundreds of the seeds and small vines, but have never had enough to be of any value. They have not died, but simply have not acquired the necessary growth to give enough bloom to notice any results with the bees. It makes a most beautiful arbor covering.

Malvastrum coromandelianum is a very common weed, but a good honey-plant. The cattle eat it quite freely when short of grass. On the right is a white bell-flower, but not the Campanilla Blanca, from which the honey is gathered.

Holguin Cuba.

Campanilla in Cuba

How I Became a Beekeeper

BY C. T. OHLINGER.

WHEN about 25 years ago I was installed as pastor of a small parish in the city of Newport, the aristocratic summer resort of Rhode Island, I had little thought of ever becoming a beekeeper. In a city surrounded by salt water, where most outdoor diversions have a nautical twist, where yachting, bathing, fishing are the Alpha and Omega of sports, the idea of beekeeping hardly suggests itself. Besides, the city pastor who conscientiously looks after the welfare of his congregational hive has little time for hobbies or diversions be they ever so beneficial to one who works with his brains seven days in the week.

After several years of toil, my health failed and a change was imperative. The perplexing question, what to do next, was solved when I received a call from a country parish in the highlands of western New York. There was not much preaching and still less visiting to be done. I was to be the first resident pastor in the smallest town of the Union, and all concerned advised me to accept. I did. The change from a thickly populated manufacturing State to that out-of-the-way rural spot was so abrupt that I felt out of place and had to bring a good part of my adaptability into play to become reconciled to the new situation.

My church was located two miles distant on Basswood Hill, in the center of the "town," said town supposed to be six miles square with an enrollment of 90 qualified voters at the last election.

One day one of my parishioners, a thoughtful man, brought me a beehive. He thought it would be well for me to tinker with something of this sort. He claimed for it both pleasure and profit. It was accepted. I recalled that my grandfather in Europe had been a beekeeper whose rows of straw skeps I often watched in the summer waiting for the "big bee" to come out of which I heard him speak occasionally. With visions of my boyhood days I readily seized the opportunity of becoming a beekeeper myself, though it had to be on a small scale.

I knew nothing about bees, so I ventured a few questions. The man who brought the hive told me that there were yellow bees, called Italians and black German bees. The yellow bees, he said, were considered gentle, while the "Germans" had a bad reputation as ferocious stingers. Mine were mixed, the blacks predominating. Furthermore I was advised to give the hive some kind of winter protection in the shape of an old carpet or quilt, and in order to keep the ants out, the hive should be raised up from the ground. Of course, no honey could be expected until the bees had swarmed next summer.

CAMPANILLA BLANCA
LA FAMOSA MIEL
DE CUBA

Campanilla Honey

Guayaba

Being thus thoroughly instructed in beekeeping, I felt competent to take up the new pursuit, and that same evening I began operations according to instructions. It was an old 10-frame Wisconsin portico hive with a telescope cover glued down tight all around. Before throwing the carpet over the hive curiosity prompted me to pry up the cover to take a look at the bees. They were all alive; in fact, very much so. Almost automatically the cover dropped back onto the hive. It gave a nice thud. The carpet wasn't half in its place when the entire apiarian force within the hive was already mobilized against the bungling intruder. There really wasn't time to contemplate with what precision and determination the attack was made. I beat a hasty retreat to the nearby woodshed carrying the advance guard on my black fur cap.

The noise and commotion caused by this sudden outbreak of hostilities aroused the whole family. They all stood in the doorway, at a safe distance, half frenzied, watching, advising, sympathizing with father, the victim of innumerable, merciless infernal bugs. I was fanning the air like a windmill. The excitement did not subside until the last wretch of a bee was tread under my feet. Surely, I felt that some "capital punishment" had been inflicted upon me. The burning impression of several well-aimed stings behind the ears and two similar punctures on the upper lip emphasized the wisdom of a strict neutrality toward a hive of live bees irrespective of color or nationality.

All winter long the carpet hung over that hive in a neglectful way. When spring came and it was time for all nature to awaken, my bees continued their peaceful slumber.

I was glad they were dead. For now I could investigate the ins and outs of a beehive without fear of being murdered. Feeling reasonably sure from outward observation that all within were dead, really dead, I opened the hive. What I saw was new and instructive. Of course, the suggestion of a covering was misunderstood. It should have, the books explained, been placed directly over the frames inside of the hive. As it was, the bees froze to death, huddled together between the frames, a starved, soiled, sorry-looking lot, offering a practical illustration of poor wintering.

I now dissected the hive, took out the frames, one by one, with an eye to their size and shape. I studied the construction of the combs, the worker drone and queen-cells and their position. With the aid of a manikin I became familiar with the anatomy of the queen, the workers and the drones, their functions and habits. What I read was supplemented by actual observation later on. During the first winter in the country I burrowed through considerable bee-literature, domestic and foreign, and when the season was at hand I was ready to put my book-knowledge to some practical use. Without the book, the hive, no doubt, would have remained a mysterious puzzle. Beekeeping, I found, is a conglomeration of complicated details which must get fixed in one's mind before anything like success can be attained.

D. W. Millar and a Native Cuban

I bought 10 new colonies. I increased and decreased, voluntarily and involuntarily. Each season had its ups and downs. There was profit and loss, pleasure and pastime galore. The science of queen-rearing and the management of bees at swarming time proved to be a many-sided and very fascinating problem. The scientific bee-masters of Europe, for instance, are still wrangling with the subject of parthenogenesis, while the American beekeeper is largely interested in what he can get out of a hive in the way of a honey crop.

Experimenting with many new inventions I found that the most simple appliances give the best results. When foulbrood, that dreaded bee-disease appeared in my yard I was startled. At a beekeepers' convention I interviewed a veteran on the subject. He spoke consoling and encouraging words. The books and bulletins explained the cause, effect and remedy. I got along fairly well with the so-called McEvoy method of shaking all the bees onto starters. But I succeeded best by my own more radical cure of consigning the whole infected lot to the furnace. For a time the question of hives also preyed upon my mind. All beginners, it seems, are affected that way. Not that I felt called upon to invent something new, it was merely lack of confidence in the style of hive I had adopted. The doctors did not agree on the subject at that time, nor do they now. I selected the 10-frame hive which is now becoming standard.

The question of comb or extracted honey production was decided in favor of the latter because it was a surer and therefore more profitable crop in my locality.

Today I am down South preaching as before. But my two boys who learned with me as they grew older remain on the farm in that remote town looking after the 85 colonies that make up the present apiary. In the summer I plan to go back to the old homestead to spend sometime among the bees. Their ceaseless hum and industry never fail to freshen and inspire me to new endeavors. At swarming-time, it seems, there is more "going on" within the 200 square yards that encompass the apiary than in 20 city blocks. It certainly is nature's own moving picture show.

Cambridge, Md.

CONVENTION PROCEEDINGS

Tennessee Field Meet.—We are in receipt of a letter stating that Mr. J. M. Buchanan and Mr. W. E. Drane are endeavoring to arrange for a field meeting of Tennessee beekeepers some time next summer. We are promised an announcement for our columns when arrangements are completed. In the meantime beekeepers who are interested in organizing for cooperation in selling, or who will be interested in making an exhibit at the 1916 Tri-State Fair are requested to write to Mr. W. E. Drane, 47 Union Ave., Memphis, Tenn.

Massachusetts Meeting. — The Eastern Massachusetts Society of Beekeepers will hold their January meeting on the 8th at 3 p.m., in Room 15, Old South Building, Boston. The regular speaker of the day, Mr. Allen Latham, of Norwichtown, Conn., will speak on "Building Up Nuclei into Full Colonies." In addition, the American Bee Journal will send Mr. Frank C. Pellett, of Iowa, who will also address us at this meeting, and also the Worcester County Beekeepers' Association at their regular meeting at Worcester on the same day at 8 p.m. BENJAMIN P. SANDS,
Secretary.

New York State Convention. — The beekeepers of New York State at the Syracuse convention have appointed a publicity committee which is to offer premiums of $15, $10, and several of $5, for sketches, snappy, comical, captivating, on the subject of honey, to be used on postal cards, with illustrations showing some feature of honey production. The beekeepers of course are expected to assist in the distribution. Candidates for this competition should write Mr. F. Greiner, Naples, N. Y. Let the good work go on.

Iowa Convention.—The 4th annual meeting of the Iowa State Beekeepers' Association was held at Des Moines Dec. 14 and 15. The meeting was well attended and the members enthusiastic. The illustrated lectures at the evening sessions were especially enjoyed. Monday evening Dr. Phillips talked on "Beekeepers of the United States," and his pictures showed many familiar faces from various States, as well as those not so well known from Hawaii and Porto Rico. Tuesday evening Prof. L. A. Kenoyer, of Ames, talked on "Insects and Flower Pollination," dealing more especially with plants of economic importance. By means of a large number of slides he made clear the different ways in which plants of many kinds are fertilized and the importance of the honeybee for this purpose.

The question box was conducted along new lines. This feature was advertised long in advance and the questions sent in were assigned to members before the meeting so that there might be ample time for preparation. Unfortunately those who sent in questions were in few cases present to hear the answers.

Strong resolutions were adopted endorsing the work in bee-culture at the Agricultural College and the work of the State bee inspector. The discussions that followed the various papers were animated and interesting.

Secretary S. W. Snyder was presented with an easy chair in token of appreciation of his services to the association. Officers elected for the ensuing year are as follows:

President, C. E. Bartholomew, Ames; Vice-president, B. T. Bleasdale, Des Moines; Secretary, Hamlin B. Miller, Marshalltown. Directors, W. S. Pangburn, Center Junction; J. H. Schlenker, Ankeny; J. I. Danielson, Fairfield.

Idaho-Oregon Honey Producers' Association.—The Idaho-Oregon Honey Producers' Association held their annual meeting at Ontario, Oreg., Dec. 7 and 8. The manager, P. S. Farrell, made his report, showing the association to be in good financial condition with nearly all the honey crop of the menbers sold at satisfactory prices. The following were elected directors for the ensuing year:

J. F. Weaver, Ontario District; C. W. Nelson, Vale; H. M. West, Parma; P. R. Randall, Nampa; J. M. Stark, Middleton; Homer Cheney, New Plymouth; C. E. Dibble, Payette.

The directors organized and elected C. E. Dibble as president of the asso-

PROF. C. E. BARTHOLOMEW, PRESIDENT IOWA BEEKEEPERS' ASSOCIATION

ciation with J. M. Stark as vice-president, and P. S. Farrell, as secretary and manager. The association adopted the grading rules of The Colorado Honey Producers' Association; also voted to make the single tier glass front shipping-case the standard for the association.

Wm. McKibben, of Star, Idaho, gave a very interesting account of his experience with American foulbrood.

Mrs. Homer Cheney, of New Plymouth, spoke enthusiastically of the use of honey in cooking.

Mr. J. M. Stark told how he got a crop of comb honey from diseased colonies by shaking early in the spring, then feeding to build them up by the time the honey flow is on.

Mr. H. M. West gave his experience in queen-rearing the past season. He said he had the best success by making his colonies strong, then dividing the brood-nest with queen-excluding zinc and placing grafted cell-cups in the queenless side. By this method he seldom fails to get a nice batch of cells, and the queens produced are large and vigorous.

Mr. C. W. Nelson, of Vale, Oreg., told how he produces section honey without the use of separators. He puts shallow supers of extracting combs on his colonies to catch the early honey flow, thus preventing the brood-nest from becoming congested. As soon as the main flow starts he raises these up and puts on a super of sections, using 28 7-to-the-foot sections with about four-fifths depth starters. Having a strong force of young bees, work is started at once in the entire super, and the result is practically uniform sections. By this method he could secure 28 full weight sections, 90 percent of which would be marketable in less time and with less work and expense than he could secure 24 sections with separators.

The meeting then adjourned, all expressing themselves as well repaid for attending. There were present about 40 members of the association, also a number of non-members who took an active part in the discussions.

W. B. Moore.

Meeting at Massachusetts Agricultural College.—The Massachusetts Agricultural College invites all beekeepers to meet with the students in beekeeping of the Winter School of this Institution on Jan. 10, 1916, at 2 p.m., Entomology Building. Mr. Frank C. Pellett, Inspector of Apiaries for Iowa, will deliver an address.

After the address there will be informal discussions. The Beekeeping Department also will be open to visitors, and is prepared to show new features of current interest.

Burton N. Gates,
Associate Professor of Beekeeping.

Montana State Beekeepers' Convention.—The Montana State Beekeepers' Association will hold its annual convention at Billings Jan. 20, 21 and 22, 1916, in the basement of the Parmly Billings Library. All meetings will begin promptly at 9 a.m. and 2 p.m. respectively. An interesting and instructive program will be carried out. All beekeepers of the State, whether members of the association or not, are invited to attend the convention and take part in the discussion and the question box. One session will be held in conjunction with the Montana State Horticulturists Association at which topics of mutual interest will be discussed.

Rates of one and one-third fares will apply if a railway receipt or certificate is asked for when purchasing a single ticket from your local agent and presenting same to the association secretary upon your arrival at the convention. Percy F. Kolb, *Sec.-Treas.*

Billings, Mont., Dec. 16.

Ontario Association.—This convention was held at Toronto Nov. 23 to 25, 1915. There were nearly 200 beekeepers in attendance, and the interest was keen from first to last. Nearly 100 persons stayed to the afternoon session on the third day until the meeting had to break up at 4:45 p.m., to allow a number to take 5:00 o'clock trains.

President Byer drew attention to the heavy winter loss of 1914-15, attributing it to inferior stores and the poor breeding season of the fall of 1914. He stated that the honey crop had been good west of Toronto, but rather light from that point east. The local demand for honey has been exceptionally good, and generally speaking the prices recommended by the Crop Report Committee have been received.

The secretary-Treasurer reported a membership of 1130, and a balance on hand of $233.92. A larger number of members than ever had taken advantage of the opportunity to purchase pure-bred queens cooperatively through the association. Sixty local apiary demonstrations had been held during the year with an average attendance of 32. This, in view of the rainy season, was considered very good.

Instructive addresses were given by Dr. E. F. Phillips, of Washington, D. C., on "Temperature and Humidity in the Hive in Winter," and on "Outdoor Wintering." F. W. L. Sladen, of the Central Experimental Farm, Ottawa, gave a report on investigations of "Honey Production from the Goldenrods and Asters;" and Prof. L. Caesar, Provincial Entomologist, read a paper on "Poison Sprays and Poison Baits and their Relation to Bees."

Officers elected for the ensuing year were: President, F. W. Krouse, Guelph; 1st Vice-President, James Armstrong, Selkirk; 2d Vice-President, W. W. Webster, Little Britain; Secretary-Treasurer, Morley Pettit, Guelph.

Three rather important resolutions were passed as follows:

1. To have the Executive Committee with D'Arcy Scott, of Ottawa, and Mr. J. D. Evans, of Islington, petition the Dominion Government to take measures to prevent the importation of bees from diseased districts.
2. That Messrs. J. D. Evans, N. M. McIntyre and R. B. Ross be a committee to request the Ontario Government to increase the fine in the present act against spraying fruit trees in full bloom, to be not less than $25, and not more than $100.
3. That the Provincial Apiarist be requested to conduct experiments to prove the effect upon bees of exposing sweetened poisons for the destruction of grasshoppers, army worms, etc.

Morley Pettit, *Sec-Treas.*

Guelph, Ont., Dec. 1.

HOME OF W. D. CRAIG. HINDSBORO, ILL.

Winter School in Beekeeping.—The Massachusetts Agricultural College announces its annual Winter School for Beekeepers, which lasts ten weeks, commencing Jan. 3, 1916, and closing March 10. This is one of 28 short courses carried on simultaneously. It is possible for the students to arrange their work so as to secure several of the 28 courses offered.

The beekeeping course deals with fundamental and practical apiculture, its relations to horticulture, that is the growing of field and market garden crops, greenhouse vegetable production, cranberry culture and fruit raising. The following subjects, among others, will be included: Natural history and behavior of bees; races of bees; handling and manipulation; queens and their importance; wintering; spring manipulation and kindred topics; comb and extracted honey-production; care of apicultural products; diseases of bees and their treatment; with a discussion of the tools and implements of beekeeping.

This course is usually largely attended. This college is particularly well equipped both for the intensive and smaller beekeeper.

The course comprises two lectures and one laboratory period weekly, with certain periods devoted to special topics and specially arranged for. Those interested in enrolling should address the Extension Service, Massachusetts Agricultural College, Amherst, at an early date, requesting an application blank. Full printed information is available. The course is in charge of the writer, assisted by Mr. John L. Byard.

BEEKEEPERS' CONVENTION.

A convention is usually held annually. The 1916 convention is not yet fully planned. A special announcement will appear in this paper later. The date, however, is determined for March 14-16 inclusive. This forms the conclusion of the Winter School in Beekeeping. A number of prominent authorities will appear upon the program. Set aside these dates and await details.

TWO OTHER COURSES.

The Spring Beekeeping School, May 31 to June 14, 1916, inclusive, is an intensive school for practical beekeepers. An especially attractive course is offered this year. This school is held at Amherst once in three years. A special announcement will appear in this paper shortly.

During the annual Summer School, a course in beekeeping will be given beginning about the middle of July. This course is designed primarily for teachers and such others as are not able to attend the more intensive course. Announcement will be issued in the spring.

Burton N. Gates.

Amherst, Mass.

National to Meet in Chicago.—We have just received word that the next convention of the National Beekeepers' Association will be held at Chicago Feb. 22, 23 and 24, 1916. Four of the five directors voted for Chicago as the place of meeting.

PAPERS AND ADDRESSES PROMISED.

"Use and Misuse of Prime Swarms"—Grant Anderson, San Benito, Tex.

"Advertising and Selling Ripe Honey"—R. M. Spencer, Ventura, Calif.

"Beekeeping in Utah"—M. A Gill, Byrum, Utah.

"Teaching Value of Honey in our Public Schools"—Geo. W. Williams, Redkey, Ind.

"Insuring Honest Values to Queen Buyers"—Kennith Hawkins, Plainfield, Ill.

"Extending the Use of Honey in Cooking"—E. H. Bruner, Chicago, Ill.

"Possibilities and Limitations of Inspection"—Frank C. Pellett, Atlantic, Iowa.

"Establishing a Trade Name"—E. R. Root, Medina, Ohio.

"Some Beekeepers of Canada and their Apiaries" (with stereopticon slides)—Morley Pettit, Guelph, Ont.

"Importance of Bees in Pollinating Economic Plants"—L. H Pammel, Ames, Iowa.

"Outapiaries"—C. P. Dadant, Hamilton, Ill.

"The Depressed Honey Market"—J. E. Pleasants, Orange, Calif.

"Beekeeping Improvement Through Agricultural School Work"—Francis Jager, St. Paul, Minn.

Papers (subject later)—Grover Matthews, Filer, Idado; J. H. Stoneman, Blackfoot, Idaho; D. C. Polhemus, Lamar, Colo.

Illinois Meeting of Nov. 29-30.—This was one of the best meetings the Illinois association ever held, although the number in attendance was not great, about 30. There was no time lost, and the four sessions were full of interesting discussions after the reading of each address. One of the many features was the paper read by Dr. Phillips, of the United States Bureau of Entomology. Other addresses were read as announced, but the members were disappointed in the failure of both E. R. Root and N. E. France to be present.

Several important steps were taken, which must help the progress of beekeeping in Illinois. A resolution was sent to the General Assembly, urging the continuation of the appropriation for inspection, as the report of the inspector showed a fair progress in the extinction of foulbrood. This progress appears mainly in the educating of the farmer-beekeepers upon the diseases of bees through the visits of the inspector or his deputies. The need of compulsion in eradicating disease, which was dreaded by many, has proven unnecessary, owing to the common sense and willingness shown by the average beekeeper in treating diseased colonies.

Another resolution was passed unanimously, asking the State board of Agriculture to erect a building for the separate use of the Bee and Honey Show. The example which has been set by States like Minnesota is worthy of imitation. The Illinois bee and honey exhibit has been kept in narrow limits by lack of inducement. A special building containing a separate room for the demonstration of honey extraction and other manipulations will enhance the growth of bee-culture and increase the demand for honey on the part of the uninformed public. Too many consumers are still in ignorance of the methods of production of extracted honey, and have a prejudice against it. This may be easily overcome by demonstrations before the public.

At the urgent request of Geo. W. Williams, secretary of the Indiana association, a resolution was passed creating a special committee to request the superintendents of public schools to give honey proper credit in the teaching of domestic science. Just what may be achieved by this committee remains to be determined, but the step is in the line of progress.

The beekeepers of Illinois should attend this annual convention by the hundred instead of by the score, if they wish to help increase the consumption of honey.

MISCELLANEOUS NEWS ITEMS

The Werner Fund.—We are sending to Mr. Werner the subscriptions for relief which have come to us. Amount previously acknowledged $34.13.

R H. Schmidt, Sheboygan, Wis.	$2.00
A. Mottaz, Utica, Ill.	2.00
G. W. Bercaw, Glendale, Calif.	1.00
Geo. S. Wheeler, New Ipswich, N. H.	2 00
Irving Long, Marceline, Mo.	2.00

Golden Wedding.—Mr. and Mrs. E. Whitcomb, of Friend, Neb., celebrated their Golden Wedding anniversary on Dec. 10 last.

Mr. Whitcomb is a veteran of the Civil War, who began keeping bees in the sixties. He has been an extensive beekeeper and was superintendent of the bee-exhibit at the Nebraska State Fair for over 30 years. He put up and managed the Nebraska exhibit at the Columbian Fair, in 1893, had charge of the bee-industries at the Omaha International Fair in 1898, where was displayed one of the most extensive bee and honey exhibits. He was for many years president of the Nebraska Beekeepers' Association and is therefore a national and familiar figure.

Our good wishes go to the *young* couple. May their happy days continue!

Campanilla Honey.—We have before our eyes a 12-page pamphlet, neatly gotten up, illustrated with 17 half-tones, with the title "Campanilla." It is issued by an enterprising American, D. W. Millar, already known to our readers. His home is in Holguin, Cuba, and he is making a deserving endeavor to raise the value of good Cuban honey, by describing the production of honey in the modern way. We wish him success.

Revised Edition of Beekeepers' Library.—The revised edition of "The Beekeepers' Library" has recently been issued by the State Apiarist of Iowa. The former edition was entirely exhausted. The new bulletin is revised and brought up to date and contains a list of the available bulletins relating to beekeeping issued by the government and by several different States.

Almost all the bee-books now on the market are described so that the reader can decide for himself which will best meet his needs. The bulletin will be sent free to Iowa beekeepers who write to the State Inspector, Frank C. Pellett, Atlantic, Iowa, and ask for Bulletin No. 4.

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Death of Mrs. Emerson T. Abbott.—A letter received in St. Joseph from Emerson T. Abbott, who for many years was a resident of St. Joseph, Mo., contains the information that his wife died in a hospital at Jackson, Miss., Oct. 8. Mr. Abbott's home is at McHenry, Miss. He writes that his own health is very poor, and that he fears he will never see St. Joseph again.

Emerson T. Abbott was interested in bee-culture here and published a paper called The Modern Farmer and Busy Bee for a number of years. With his wife he moved to Mississippi ten years ago.—*St. Joseph News-Press.*

Mr. Abbott was at one time one of the directors of the National, and well-known among the leading apiarists of the central West. We extend to him our sympathy.

◆

Ontario Experiments.—The Ontario Experimental Union report, published by the Ontario Department of Agriculture shows a number of experiments carried on by 541 beekeepers. Although, owing to a poor crop in 1914, the experiments were not so conclusive as they might have been, still the Provincial apiarist in charge, Mr. Morley Pettit, is to be congratulated on getting so many beekeepers to become interested in these experiments, for nothing is better to induce a man to take care of his industry than comparative tests of different methods. Those who have undertaken those experiments will undoubtedly become better beekeepers as they continue their work.

◆

The Apple.—This is the title of a finely executed and well illustrated book of 492 pages, by Albert E. Wilkinson, published by Ginn & Co. ($2.00). It would be outside of the scope of the American Bee Journal, were it not for two or three paragraphs, of importance to us because they relate to bees and their connection with pomology. We read on page 221:

"It is an old story that orchards should not be sprayed with any arsenical spray during their bloom, both for fear of killing the bees that pollinate them and of fear the spray will itself injure the stigmas or pollen. Recent investigation, however, seems to show that spraying an apple tree in bloom does not do so much damage to bees visiting the tree as had been supposed; though there is still room for further test experiments. But, on the other hand, it is now thoroughly established by experience (and it conforms to common sense, too), that there is a great and ruinous danger to bees from spraying an apple orchard at a time when a cover crop of clover under the trees is in bloom, whether the trees are in bloom or not. Of course, the spray falls down into the clover, and clover blossoms have just the right funnel arrangement to concentrate the poison. In considerable parts of Colorado the beekeepers have had to move their bees away from the neighborhood of orchards, far enough to be beyond a bee's ordinary flight; those who stayed by the orchards have lost almost all their stock of bees, and this was not on account of spraying while in bloom (which is now prohibited by law in Colorado), but on account of spraying when the clover under the trees was in bloom.

"The spraying appears to kill not only the bees that visit the flowers but also the larval bees in the hive, to which the poisoned honey is carried back. One might easily stir up a scare about danger to human beings who might eventually eat honey from that hive, but doubtless the bees die off too fast to lay up a store that would hurt human beings much.

"A suggestion has been made that whenever the spray is poisonous to bees it should be mixed with enough tobacco tea so that the odor will keep the bees away from the sprayed area until the poisoned blossoms have had time to wilt."

On page 417, in explaining pollination, he writes:

"The pollen of one variety is carried to the blossoms of another in two natural ways—by the wind and by insects. There are many kinds of insects, such as bees, wasps, and flies, which aid in the cross-pollination of orchard fruits, and of these the wild bees of several species are probably the most important. But few of the wild bees can live in a large orchard, especially if it is well tilled; therefore, as the extent and thoroughness of cultivation increases, the number of these natural aids to cross-pollination decreases and it becomes necessary to keep domestic honeybees for this purpose.

"Every large orchard where the trees are numbered by the thousands should have near by a bee-yard of at least 50 swarms to help in thoroughly pollinating the blossoms and obtaining the best results. Bees will not be poisoned by the spraying of fruit trees with poisoned substances if the work is done at the right time, which is just after the blossoms fall. No sensible orchardist will spray his trees when in full bloom, and thus poison one of his best friends, the bees."

This testimonial is of value, being in the same line as the representations of practical beekeepers against spraying fruit trees in bloom. Our own experience, and that of most of our friends, is that the greatest danger is in the bee sipping poisonous nectar from a fruit blossom. At that time the clover is rarely advanced enough to be much sought by the honey gatherers. But every statement made by this author in this connection is of value to the beekeeper in helping him to convince the orchardist. For that reason, and because this work is up-to-date and practical, we believe it should be recommended. It may be secured at this office.

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Bee Moths.—Empty combs kept over winter in a place where the thermometer goes down to zero will be entirely free of moths or moth eggs in spring. In our northern and middle States bee-moths can winter only in a living colony of bees or a warm house.

APIARY OF W. D. CRAIG, HINDSBORO, ILL.

EAT HONEY
NATURE'S OWN SWEET—AIDS DIGESTION

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

DEATH

[The following lines, by Grace Allen, the beekeepers' poetess, are so beautiful that the sisters will be glad to read them, even though some of them may already have read them in Gleanings in Bee Culture, from which they were taken.]

So many things I do not understand!
My neighbor's house today is strangely still,
Insufferably sweet with heaped-up flowers.
Friends enter softly, greeting hand to hand;
A silence never-ending seems to fill
With shadowed hush the long, reluctant hours.

(Though once across the aching air so tense,
Insistent in his love and ignorance,
A baby broke the breaking hearts again
With quivered "When she tummin' back? Oh, when?")

Beneath a cloud-veiled sky and shaken trees
My slow steps brought me home, and all around
The withered leaves lay dead on every hand.
I stood at last among my quiet bees,
Stood there and stood, nor made the slightest sound—
So many things I do not understand!

A Honey-Box

In a Chicago daily—like enough in several of them—in a full-page advertisement of Marshall Field & Co., offering appropriate articles for Christmas presents, appears the following:

"Honey-boxes, in great variety of patterns. A practical novelty, $2.00 to $6.50 each."

The likelihood is that beekeeping women who read that advertisement will not be very favorably impressed. Something like this may be said: "That's no honey-box; it's a honey-dish. The idea of paying six dollars for a dish with a cover to hide the beauty of a snow-white section of honey! Why, such a section is one of the finest adornments of a table. I'd rather have a section of honey on a 25-cent plate, with all its beauty fully displayed, than to have it hidden by the most expensive pottery."

All the same that advertisement is a thing to rejoice over. Not every table of the well-to-do has honey on it, either in a 25-cent dish or a six-dollar one. To those who do not consider honey as a thing necessary for a well appointed table the advertisement will be suggestive. The thought will be: "If a house like Marshall Field's, that knows what's what in table decoration, thinks it worth while to advertise honey-boxes, I've just got to have one." Then, of course, honey must be had for the "box," and whether or not it be discovered that the honey itself is more beautiful than the dish, honey on the table will become the proper thing. Then when honey on the table has become fashionable, trust it to hold its own by its intrinsic merits as a thing of beauty and the finest of all sweets.

Now for Winter Quarters

For those who winter bees in cellar, not many things are cause for so much anxious thought as the matter of deciding when to take the bees into the cellar. Theoretically it's easy; take them in the next day after their last flight in the fall, no matter whether that be early in November or late in December. For sometimes it happens that there will be no day warm enough for flight from the first week in November until spring, while again it may happen that a warm day comes near Christmas. But who can tell, when a warm day comes the first week in November, or indeed at any other time, whether a flight-day will come later or not? And that's where the anxiety comes in.

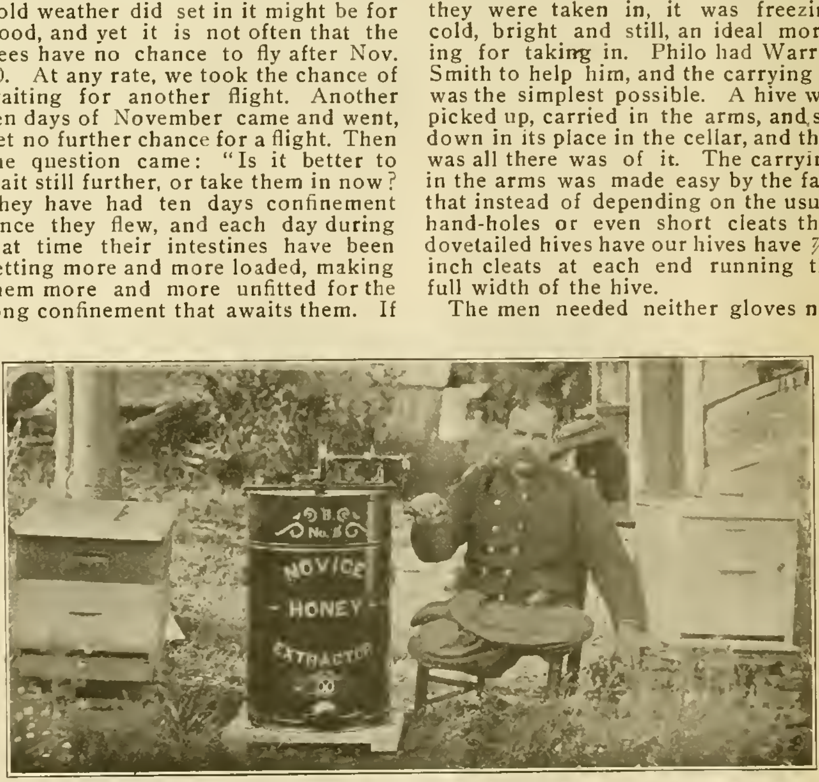
This year we had unusually beautiful fall weather in October and up to about Nov. 10. Then it continued good fall weather, but still too cold for the bees to fly. Then the question arose, becoming a little more insisting each day: "What about taking the bees in?" The fact that we had had such a long spell of pleasant weather made it rather natural to think that when cold weather did set in it might be for good, and yet it is not often that the bees have no chance to fly after Nov. 10. At any rate, we took the chance of waiting for another flight. Another ten days of November came and went, yet no further chance for a flight. Then the question came: "Is it better to wait still further, or take them in now? They have had ten days confinement since they flew, and each day during that time their intestines have been getting more and more loaded, making them more and more unfitted for the long confinement that awaits them. If they are not to have another flight—and quite often they have no chance for flight after Nov. 20—then the sooner they come in the better. But if they are not to fly again until spring, and we keep waiting and hoping until late in December, then they will be taken in very unfitted to stand further confinement, for each day they stay out they are consuming perhaps ten times as much as they would in the cellar, so one day of outdoors is as bad as ten in the cellar, *if* there is to be no subsequent flying." Oh, those tenterhooks upon which those *ifs* can hang a body!

When Thanksgiving day, Nov. 25, came, among the thousand other things for which we were thankful, the flight of the bees was not the least, for on that day they flew. How glad we were. We could then congratulate ourselves that we had not taken them in Nov. 10, for that would have given them two weeks longer confinement. Yet it is a bit doubtful whether we did the wisest thing, for it was taking too much risk. That two weeks in confinement in the cellar would not have been so very hard on the bees, whereas if no day for a fly had come the two weeks confinement outdoors would have been a very serious thing, and there's no telling just when they would have been taken in if no warm day had come.

TAKING THE BEES IN.

For a day or so after their flight it was a bit warm for them to be in best condition to be taken in, and then there was delay in getting Philo, the man that has taken the bees in for a number of years, so they were not taken in until Dec. 4. Fortunately the weather was rather mild during this delay, but on Saturday morning, when they were taken in, it was freezing cold, bright and still, an ideal morning for taking in. Philo had Warren Smith to help him, and the carrying in was the simplest possible. A hive was picked up, carried in the arms, and set down in its place in the cellar, and that was all there was of it. The carrying in the arms was made easy by the fact that instead of depending on the usual hand-holes or even short cleats that dovetailed hives have our hives have ⅞-inch cleats at each end running the full width of the hive.

The men needed neither gloves nor



JESSE C. COCKRAM, A CRIPPLE UNABLE TO WALK, BUT AN ARDENT BEEKEEPER veils, for the bees did not wake up till some time after they were in the cellar. The precaution had been taken, however, to crack the hives loose from the stands the evening before, by raising them up. If this had not been done, the jar given when a hive frozen to its stand was lifted would have wakened the bees before the cellar was reached, and then there would have been trouble. But the hives were lifted and carried so quietly that the bees didn't realize what was going on. Each man took hold of a cleat in each hand, raised the hive, set it on his knee, then put an arm under each cleat, letting his fingers reach around the farther side of the hive, and with the hive thus tightly hugged against his breast went on his way. That's one advantage of the 8-frame hive, an advantage not to be despised, that it is so light that it can be picked up and carried thus quietly by one man without any ceremony. But that advantage is more than an offset by the uncomfortable feeling that a larger hive would be so much safer against running short of stores.

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Honey Recipes

CAKE WITHOUT SUGAR.

Sugar, too, seems an almost indispensable ingredient of cake; yet with thick honey on hand, a delicious cake may be evolved. Cream until very light half a cupful of butter, and add, a little at a time, 1⅔ of a cupful of thick honey. Have two eggs beaten lightly, add these to the butter and honey with one teaspoonful of caraway seeds (these, of course, may be omitted) and two teaspoonfuls of baking powder sifted with two cupfuls of flour. Beat the batter well, turn into a ring mold that has been well greased and dredged with flour and bake about 35 minutes. Ice when cold with a lemon frosting.

VIRGINIA HONEY MUFFINS.

Beat one egg well and mix in half cupful of milk, 1½ tablespoonfuls of melted butter, ½ cupful of honey, 1½ cupfuls of flour sifted together with 2 level teaspoonfuls of baking powder. Bake in buttered muffin tins for 20 minutes.

HONEY FLUFF.

Three cupfuls of granulated sugar, ½ cupful of strained honey, ½ cupful of water, one teaspoonful of lemon extract, and whites of 2 eggs.

Boil together until the mixture hardens in cold water, then pour it slowly over the well-beaten whites of two eggs. Flavor and beat together until stiff enough to drop on buttered paper. One cupful of chopped nut-meats may be added.—*Good Housekeeping*.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

To Correspondents

I have a letter containing some questions about bees, with this for a postscript: "I wrote to you last month, but you did not answer. I have been taking the American Bee Journal for about three years" I make it my business to answer every letter that comes in time so the answers can appear in the next issue. But some do not realize that it takes considerable time to write answers, mail them, have them put in type, print, bind, and mail the journal. So if a letter comes from a considerable distance, and is not started until the middle of the month, it may happen to be too late to appear in the first following issue. In some cases, too, it makes a difference whether the letter is directed to the American Bee Journal at Hamilton, or directly to me at Marengo, Ill. So it is the better plan always to send questions directly to me. In the present case I remember answering the same questions, so of course it would not be wise to repeat the answers.

Some prefer that their names shall not appear with their questions, and so do not sign their letters with their names, but only with the name of their post-office or State. In no case is the writer's name printed unless a particular request to that effect be made. But on more than one account it is desirable to have the proper signature; so please sign your name always, and you may be sure it will not be printed. And whatever you do, don't ask answers by mail.
C. C. Miller.

Spoiled Zinc

I have about 200 perforated zincs being eaten up by some white substance that forms on them.

1. Could you tell me what is the cause of it?

2. What should a person do to prevent it?
ILLINOIS.

[Dr. Miller being unable to answer the above questions, the matter was submitted to an expert in metals, who replies:]

ANSWERS.—1. The white formation on the zinc in question is caused either by contact with something of a corrosive nature, such as an acidulous liquid or substance, or it may be the result simply of exposure to air, and particularly to damp air.

2. To prevent it, paint the zinc with boiled linseed oil, which, while it will dry slowly, will make a permanent, durable coating which will protect the zinc from the effects of exposure, etc.

The corrosion may be removed by using a stiff wire hand-brush, such as may be bought of jewelers' supply houses.

Treating Bees for American Foulbrood

I see that you gave combs of honey to two colonies this fall. I tried the same thing two years ago, but it did not prove a success with me. Both colonies built up very rapidly in the spring, but American foulbrood appeared in a few cells in the middle of summer and I tried the regular plan with success. I am anxious to know how you succeed.

Another colony showed a few cells. I fed it, as well as others that might be affected, syrup with salicylic acid and carbolic acid. The disease disappeared in this one, but later it swarmed twice, which left it very weak. Later I found three cells of diseased brood. They built up rapidly, and when the young queen filled the hive with brood, I could find no trace of disease.
IOWA.

ANSWER.—You gave frames of sealed honey in the fall, and a few cells of American foulbrood appeared in the middle of the next summer. That is hardly conclusive proof against that plan of treatment, for the disease might have come from outside. At any rate failure in a few cases should not entirely overcome the testimony of success in so many other cases.

You removed the only frame in which you found the disease, and it did not reappear That would likely work in some cases, and fail in others.

Across the water no small dependence is placed upon feeding medicated syrup, but in this country it is generally agreed that it is useless. Whatever may be the case with European foulbrood, for American foulbrood the only safe thing seems to be to shake, unless it be that it is just as well to give sealed combs in fall. In either case there must be the destruction of the diseased combs.

When to Treat European Foulbrood?

1. Late this fall several cases of European foulbrood have developed. I first doubled them up and shook one of them. Now a week or so ago I went into them again and found (in two of them) no trace of foulbrood. The shook swarms are also all right. Now these swarms are liable to break out again in the spring. What is the earliest time that you would advise to treat them? Would you advise the 10 day method with requeening?

2. If I put a queenless swarm on full sheets of worker foundation, or if they lose their queen soon after I hive them, will they build any more drone-cells than they would if they had a queen? Of course, if they had only starters they would.
IOWA.

ANSWERS.—1. In most cases I should hardly expect a recurrence of the disease. In any mild case of European foulbrood, if the queen were a good one that I wanted to keep, I should cage her for 10 days in the hive and then free her. If the queen were poor, or if I could give a better one, I would kill the queen and at the same time introduce a virgin just emerged, or else introduce a laying queen 10 days after the killing. In a severe case I should kill the queen and proceed as just mentioned. Operate as soon as convenient after bees have gotten nicely to work in spring.

2. If you have a queenless swarm, it is not likely that it will build at all, but will return to the mother colony. A swarm will also return if it should lose its queen within two or three days after being hived, or even longer than that. But if it should lose its queen at any time too late to return to the old hive, you would be pretty sure to find a let-up in comb-building, with drone-comb put in wherever there might be any place not entirely filled with worker-foundation. Some have even reported the worker-foundation torn down or changed to drone-cells.

Drones in Worker-Cells

To cure foulbrood I transferred my bees onto new foundation and reared young queens, and two or three of them produced nearly half drones in worker-cells. Of course, they were a great deal smaller than drones reared in drone-cells, and they were not by themselves, but promiscuously mixed in the cells. Who can explain the case? I have kept bees 40 years or more, and never saw anything like it before. I destroyed them and introduced other queens. OHIO.

ANSWER.—Such cases are not common, but they do happen now and then. Generally it is because the queen is old and the supply of material in her spermatheca has become nearly exhausted. But your case cannot be accounted for in that way, since the queens were young. Either the fecundation of the queens was imperfect, or there was imperfection in the muscles concerned in performing the act of fertilizing each egg. The remarkable thing is that you should have had more than one young queen of the same kind.

Pollen in Combs

About four weeks ago I bought 11 colonies of bees in 10-frame hives. I hauled them nine miles. Before packing them for winter I discovered that one colony was dead. They had plenty of stores for winter, but only about a teacupful of bees; their frames contained half honey and half pollen.

I am sending you a sample of the honey and the pollen. I would like to know what is the matter and what to do? They are all in their winter quarters side by side, ten in a row. Some of the other colonies have lots of dead bees outside of the hive. Iowa.

[Sample received at office. It looks normal, merely pollen and honey. No brood.—Editor.]

Answers.—There is no evidence of anything wrong in the sample received, which contains only honey and pollen (of course, no brood), quite normal in appearance. It is not a very wild guess to say that the colony was queenless, the bees having gradually died off. In such a case there would be an unusual amount of pollen, because for some time the bees continue to store pollen, and very little is consumed when there is no brood.

There is, of course, nothing to be done in the case of the dead colony, except to save the combs of honey and pollen for next year. A swarm may then be hived upon these combs, or they may be used in spring to help any needy colonies. The dead bees at the other hives are perhaps no more than should be expected.

Tin Separators

I am enclosing a sample of a cheap grade of tin, and wish to ask if such would be satisfactory for "separators," so far as *rust* is concerned? And, further, what grade do you use? Illinois.

Answer.—The sample of tin is all right. The cheapest grade will do for separators, there being no trouble from rust. I don't use any grade of tin; I use wood. For years I did use tin—the cheapest grade—but for a good many years I have used wood. Tin was better when I used tin, and wood is better since I have used wood. All depends upon whether the separators are loose or not. At first I used wide frames with the separators nailed onto the frames. The nailing was necessary to keep the separators taut and in place. But if wood had been used, there would have been at least a little tendency to swelling and shrinking, make the separators curl a little, whereas there can be no shrinking and swelling of tin. Since using T-supers the separators are of wood, and loose. The grain of the wood keeps it straight lengthwise, and being loose there is no chance for curling no matter if there is a little shrinking and swelling. If tin were used loose, there would be some tendency to waviness lengthwise.

Bees in Cellar

December 1, I put 30 colonies of bees in my house cellar, which is 14x18 feet, sand sides and bottom. The hives are piled up on benches two feet from the floor. I left the cealed covers on and bottoms also. I gave them ⅞-inch entrance the full width of the hives, and the bees seem to be more uneasy than they do with ⅜-inch entrance; the hives have no vent above. The thermometer inside the hive and outside the cluster on the bottom board registers 48 degrees. The thermometer stands around 44 and 46 degrees in the cellar. The bees seem to be more quiet with the ⅜ inch entrance than they do with the ⅞ inch. The cellar seems to be quite dry. I have a ventilator from the outside, 14x30 inches, with two thicknesses of burlap over it. It is open all the time, and I can open the door in warm weather to give more fresh air if needed. Do you think I had better raise the covers and put a piece of section under?

Last year I put two colonies in this cellar one just like I have them now and the other I took the cover off and put two thicknesses of carpet over the hive. I could see no difference in the two in the spring. They were both quiet when I took them out. Some of those colonies in the cellar are real quiet and others are very restless and uneasy. Of course, there are more colonies in the cellar this winter. I have them piled two and three colonies high. I darken the end of the cellar where the bees are with burlap. They all seem to be dry in the hives so far. Do you think to change the hives and pry the covers up would do much harm by disturbing the bees. What is your advice?

Michigan.

Answer.—I believe I would leave everything just as it is. You say the bees having the ⅞-inch entrance don't seem as quiet as those with ⅜. Sometimes, you know, "things are not what they seem." It is just possible that you are mistaken, and that the apparently greater uneasiness is because you can hear more clearly the noise at the larger entrance. If it should be true that the larger entrance is not so good, then you surely would not help matters by raising the covers. But the disturbance of raising the covers would not be a serious matter, and you might try raising at least two or three. You will probably find it will not make much difference.

Sour Honey

For the first time in my life I have a quantity (about 125 pounds) of extracted honey that is slightly soured, enough to impart a strong taste. Would this honey be safe to feed the bees after the opening of spring? This honey is in a granulated condition, and could be sold on our local market, but I do not think it would be good policy to sell it. Indiana.

Answer.—Yes, after bees fly every day, or even every week, it will be safe to feed such honey to the bees. It would be well to add at least an equal quantity of water, and of course the granules should be melted.

The probability is that the part of the honey that is not granulated is thin, and that this thin part contains all the sourness. In that case lay the vessel on its side and let the thin part drain off slowly, and then after melting the part that is left you may have a fine article. The thin part will make vinegar. But that will not work in all cases, for sometimes the honey is like lard, and the thin part will not drain off. But if it has soured at all, there is pretty surely a thin part that will drain off.

[Honey that ferments may often be improved by heating, which destroys the germs of fermentation, but it is nevertheless inferior honey.—Editor.]

Adding Room—Put-Up Plan

What difference in effect is there when a hive is overflowing with bees before the queen-cells are started? When about to add another full-depth hive-body with comb foundation or both, whether this added hive-body is the upper or under hive-body?

1. When there is nothing between the bodies?

2. When there is an excluder between?

Over a year ago you gave me a modified way of the put-up plan, eliminating the need of clipping or hunting queens. A body was to be set on the old stand with the brood, cover put on, and on that the old hive with queen and empty comb or foundation. How would it affect the result, if a person arranged the hive-bodies just as stated, only on the lower hive put an excluder, and on that the old hive-body with queen directly on without bottom-board? Later the queen was to be put back, but that is the same in either of the procedures as above outlined. Pennsylvania.

Answers.—1. If no excluder is used, with the idea of letting the queen enter the added story, then it seems more desirable to give the added story below, since that will put upon the bees no added burden in the way of keeping additional room warm, while if it is added above, the bees will have to keep both stories warm. Moreover it seems more natural for the bees to extend their brood gradually downward than upward. But if the chief thing is to make as little work for the beekeeper as possible, and the added story is to be removed when supers are given, then giving the added story above will be easier.

If an excluder is used, then the added story can only be used for surplus, and should be given above. Bees will store surplus in a story under an excluder, but when given their choice prefer to store above.

2. Never having tried it, I don't know just what would happen if the brood were left in the lower story with the queen in comparatively empty story over excluder. But I doubt whether the bees would swarm unless, and until, cells were allowed to mature in the queenless story.

Goldens for Foulbrood

In the American Bee Journal for January, 1915, page 29, under the heading, "Breeding from Prolific Queens," question 4, mention is made of some combs with dead brood in them.

These same combs contained quite a little honey, so one day last spring I set them out near the hives for the bees to clean out. The honey, I later found out, contained American foulbrood germs, so about one month later I found all but two of my colonies rotten with the disease, and I guess the two that didn't take it were too weak to partake in the feast. I then sent a sample of dead brood to E. F. Phillips, of Washington, D. C., and he pronounced it American foulbrood. Along with his answer came a bulletin on foulbrood and its cure.

I shook those bees and was very careful to follow directions, giving each colony one shake each. Some failed to stay cured, so I ordered golden Italian queens from Virginia and began to requeen. One of those colonies had a pretty bad case of it about a month after being shaken, but when those golden bees began to hatch they cleaned the dead brood right out, and it has not appeared since.

1. Do you think the disease will reappear in those colonies again next spring or will they remain healthy?

2. If golden Italians are a sure protection against European foulbrood and perhaps American also, isn't it best for me to keep that kind altogether even if they don't produce quite so much honey.

I have a friend that fought American foulbrood the past season, and he is very enthusiastic about the goldens also.

I had a lot of experience with the disease this year, and I feel it was worth many dollars to me, for I have learned things that I might have been years learning. Our honey crop was nearly a failure on account of the disease, but we got enough for our table use besides barrels of fun and a lot of stings and experience.

The thing I regretted the most was the burning of those beautiful combs, and if I ever burn any more it will be after I have given those golden bees a chance.

Father had one colony, spring count, increased to two, and took off 132 pounds of comb honey. Prospects are good for next year.

The bees are on summer stands well packed for winter with plenty of good stores, and if those yellow bees and I can conquer that foulbrood I will think we are on the road to success. Illinois.

Answers.—1. Although you do not give exact dates, I should judge from what you say that after the last treatment there was a considerable time when brood was reared, and that it was not diseased. In that case I should hardly expect the disease to reappear next spring, although there is always the possibility that it may reappear by the same door through which it first entered, which was probably from some neighboring apiary

2. If any particular kind of bees will guarantee you against disease, it will surely be advisable to use that kind, even though it should cut down the harvest considerably. I hardly think, however, it would have that effect, for a colony of bees vigorous enough to combat successfully foulbrood of either sort is likely to be vigorous enough to do good work at storing honey.

But it is assuming altogether too much to assume that "golden Italians are a sure protection against European foulbrood and perhaps American also." I think immunity against either variety of foulbrood has never been claimed for Itailians, and the most that has been claimed is that they are a help in combating the disease, and of the two kinds, the 3-banders are generally counted more efficient than the goldens. To be sure, there is your own testimony as to a bad case being cleaned up when the goldens began to hatch, and on the face of it that looks as if a colony had cleaned up a pretty bad case of American foulbrood without any help. There have been cases reported in which the bees cleaned up cases of European without any help, but I do not remember ever before to have heard of a case of American being so cured; so that the question naturally arises whether by any possibility there may not be some mistake. At any rate, if you are dreaming that you have bees that are proof against foulbrood of either kind while the disease exists in your neighborhood, you are likely to have a rude awakening from your dream.

Uniting Weak Colonies

I have bought 12 colonies in Danzenbaker hives; two were a little light. I set them on top of two strong ones, united them by Dr. Miller's newspaper plan. How do you think it would do to double them up that way in the spring and make one large colony out of two. Do you think it would make them swarm less and make them gather more honey? INDIANA.

ANSWER.—If a colony is so weak that there is little hope of its building up in time for the harvest, uniting as you mention may be advisable. Otherwise it would hardly be best, as the united colony might not store as much as the two left separate. If there should be any difference as to swarming, it would be that the uniting would increase the tendency in that direction.

Paralysis—Queenlessness

I have five colonies in movable frame hives. About the first of July they were badly affected with bee paralysis. Large numbers of them died in bad weather, but the disease would check in fair weather. In October they were left with plenty of honey and pollen to winter on, and today, Dec. 13, examined one hive that was very weak in bees. I found no eggs, brood nor queen, but I found two capped queen-cells, also three cells torn open. Will they rear queens during winter months? If so, can they be depended upon as good queens? What do you do with colonies that are found to be queenless during the winter? MISSOURI.

ANSWER—Answering your last question first, I never find any colonies queenless in winter, for I don't open a hive from the time it is put in cellar until it is taken out again. But if I should by any means find a colony queenless in winter, I would let it alone until bees were flying in spring, when I would unite it with another colony.

It appears certain that bees will rear a queen in winter, since your bees are doing that very thing. But it is hardly likely that drones are present and flying to fertilize a young queen, although it is possible that a queen reared now might be fertilized in spring. On the whole it is doubtful if such a queen reared would be very valuable, and it might be well for you to unite the colony with another. Where you are it is likely warm enough, at least on some days, for you to unite the colony without waiting till spring.

Wax Rendering

I have some old combs that I wish to render into wax. I have no wax press. Will you kindly tell me how I can do it. MAINE.

ANSWER.—The dripping-pan extractor may suit you. Take an old dripping-pan (of course a new one would do), split open one corner, lay in the pan the pieces of comb put the pan in the oven of your cook-stove, the split end projecting out and a pebble or something of the kind under the other end so as to raise it perhaps an inch. As the heat melts the comb the melted wax will run out of the split corner, and be caught in a vessel that you will set for it. Do not have one layer of comb upon another, for in that case the wax will be held in the little cups, made by the old cocoons. You will not get the wax out clean, but if you reserve the slumgum you may be able to utilize it in the future by sending off what you have accumulated to have it worked up by foundation makers.

REPORTS AND EXPERIENCES

A Bountiful Lot of Flowers But Too Much Rain

I received a letter from my brother at home, Gimlet, Ky., stating that there were inquiries concerning the condition of the bees and forage, especially the steel weed. Owing to the enormous rainfall the surplus crop was cut short about one-half this season, while there were a bountiful lot of flowers all through the summer, from April to about Nov. 30. The weather did not permit the bees from gathering as they normally do. Our greatest source of surplus was from persimmons and chestnut, beginning June 5 and lasting two weeks, in which time there was very little rainfall. The fall flow was under normal, still there was so much more honey than the bees will need to carry them through the winter. The weather so far has been quite warm, and bees flying nearly every day, as we winter them outdoors. The bees will consume about twice as much of their winter stores as they usually do, which I am afraid will result in a shortage of food for brood-rearing in the spring. We will most likely have to feed almost all the colonies to get them ready for the honey flow. C. H. WHITT.

Clarkston, Mich., Nov. 16.

A Good Season

From 63 colonies, spring count, I increased to 82. My crop was 5650 pounds of extracted and 750 pounds of comb honey. I fed 500 pounds of white extracted honey back for winter stores in addition to 1000 pounds of fall honey shifted from extracting frames by the bees. No sugar was used. One colony treated *a la* Demaree, drew out 13 frames of foundation, filled 16 frames for extracting very full; swarmed, kept queenless nine days, and wound up the season by filling 116 sections of comb honey.

Another worked for comb honey *a la* Dr. Miller, produced 216 sections, and finished by being fed not less than 15 cases more. Colonies *a la* Doolittle not a success. I gave it three years' trial. That method I will never use again. I think in a *light* and *intermittent* flow it might be a success. Five other colonies furnished from 30 to 39 Langstroth frames for extracting. WES. L. ROBERTS

Lavalle, Wis

Reminiscences

I was born and raised near Sycamore, Ill., about 20 miles from Dr. Miller's, and I made him a short visit last year. I never saw so many dandelions in one place as I saw there. I am quite well acquainted with Mr. N. E. France. My friend Mr. Ernest Root is on the move, and impressed me as a man that would not be in one spot very long.

I helped the late W. Z. Hutchinson to don his overcoat when he started from St. Louis, little thinking he would drop out of the bee ranks so soon.

I had a long talk with Mr. O. O. Poppleton some years ago, about a fixed type of Albino bees and a certain breed of chickens, to show how persistent the original blood would continue to crop out even if crossed with other breeds for several crosses. He thought it ought to be written up.

I have been working with bees 40 years next spring except a few months in the summer of 1912, having sold to Mr. F. W. Hall seven yards. He has now nearly 500 colonies in fine shape for winter.

Next spring I will likely start with five yards. My dear wife passed from this life Oct 20, after severe suffering. My daughter Beulah is a great comfort to me now.

Colo. Iowa. D. E. LHOMMEDIEU.

To Introduce a Queen to a Colony With Laying Workers

Shake all the bees off their combs in front of their hive. Put these combs on some strong colony to take care of and clean up until needed. Give to the colony with laying workers one frame full of unsealed brood and one or two full sheets of foundation. Introduce a queen by the cage method after she begins to lay, give them their combs back, if they are not too full of pollen; if they are, give them other combs, so the queen can get busy. I have used this plan several years. J. F. DIEMER.

Liberty, Mo., Nov. 22.

Bees Packed for Winter

I have just finished packing my nine colonies of bees for winter in the best shape I ever had them, hives full of bees, and about 40 or 50 pounds of honey. I have them outside, all facing the south, about 6 inches apart, with tight board wind break on north, east and west, lined with tar paper, then packed light with dry hay all around and between. The hives are covered with rubberoid roofing to keep all dry, with absorbents 4 inches deep over the frames to take the moisture, and a tight board door to use in front in case of heavy winds or storms.

I wish the American Bee Journal and all of its readers a glorious Thanksgiving.

H. C. SPRINGER.

McCallsburg, Iowa, Nov. 20.

A Bit of History

Twenty years ago Mr. Thos. Chantry (now of Price, Utah) and the writer were discussing the possibilities of introducing sweet clover into the Western States. At that time it was not grown in the United States in any quantity, and I believe the value of it as a honey-plant was not at that time appreciated. I may be mistaken a little in regard to other facts.

Mr. Chantry took the task of scattering the seed in waste places in western Iowa and southeastern South Dakota, and I was to boom it in the newspapers and bee-journals. The scattering of the seed had to be done at night, as at that time it was considered a noxious weed by most people.

The United States Department of Agriculture, Farmers' Bulletin No. 485, will explain

R. A. MORGAN, VERMILLION, S. DAK.

to what extent the plant has grown in favor in the United States during the past 20 years.

I notice on page 338, American Bee Journal for October, 1915, Mr. Wesley Foster is poking a little fun at me (which of course is taken in good part), but needs a little explanation. My statement was this: I will give $25 per acre as rental for white sweet clover that is left to go to seed each year, amount limited to 100 acres within one-half mile of my apiary.

I will say that this offer is still in force, and that I think I can make good with it. I, of course, would not make this offer to supply a greater number of bees than I could manage myself. I believe that it is the best honey-plant known to modern apiculture. I have been in the bee-business since 1870, and have samples of honey put up in 1882 South Dakota leads the world in the quality of honey, and the future prospect for honey in this State is almost unlimited. I did not make South Dakota, but I did help to make beekeeping possible here. The most of my experience was gained in Columbia Co., Wis. I took first prize on honey at the State Fair at Madison, Wis., in 1883, as a young man. I should be pleased to correspond with any one interested in apiculture or anything pertaining to it. R. A. MORGAN.

Vermillion, S. Dak., Oct. 14.

[Reports indicate that sweet clover yields more freely and regularly west of the Mississippi than farther east. The experience of beekeepers along the Missouri river and westward seems to justify a higher regard for sweet clover as a source of nectar than is usually given in the East.—EDITOR.]

European Foulbrood and Moths Destroy the Keeping of Bees

In 1912, after the colonies became strong, I divided them up, giving untested queens to the queenless parts. Soon after that I became aware that there was something wrong with the brood in many of the hives. Until that time I had never seen foulbrood of either variety. I immediately corresponded with State Inspector Pellett, and he directed me to the Department of Agriculture. They sent me a tin box in which to send them a sample, which I did. In due time I was notified that my bees had European foulbrood. All the treatment I gave them that fall was to double up so that all would be strong, and see that every colony had a young Italian queen.

About mid-summer the deputy inspector called. I drove him over the country a little. We first visited my own apiary where we found disease in only one colony. After that we called on a farmer about one mile southwest of where I live. He had five or six colonies all more or less diseased. The next farmer we visited had 15 to 20 empty hives, but no bees. He said the moths took them.

About two miles farther east we visited a farmer who used to have 15 to 20 colonies. He had two colonies left, both rotten with foulbrood. Going south a mile we called on another farmer who formerly kept about a dozen colonies. He had one left and it was badly diseased. Going east a mile we visited a farmer who had four or five colonies that were free from disease. This was the sixth yard we had visited, and the first where we had not found European foulbrood.

I got practically no honey this year (1914). It has been an off year. I am not worrying about that. I have seen many such years. Neither do I fret about European foulbrood. I have not seen a trace of it this year. But I may expect it any time. Still, at the rate it is doing its work it must soon run out of material. Looking at it in that light I am not sure but it is a blessing in disguise.

Jefferson, Iowa. GEO. M. THOMSON.

[This is another proof that there is no need of becoming despondent over European foulbrood, since it may be easily over come, with a little energy.]

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

TELL several thousand people what you have for sale with a few words in this department.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
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GOLDEN all-over Queens. Untested, $1.00. Tested, $3.00. Breeders, $5.00 and $10.
Robert Inghram, Sycamore, Pa.

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QUEENS FROM THE PENN CO. See our large ad. elsewhere in this Journal.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
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PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
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QUEENS—Italians exclusively, golden or leather-colored. One select untested, $1.00; 6, $4.25; 12, $8.00. Tested, $1.25. Best breeder, $5.00. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

THOSE WISHING to buy queens next season will find it to their advantage to write me for price list or watch ad in this paper.
I. N. Bankston, Box 135, Buffalo, Tex.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

FOR SALE—Bright Italian queens at 75 cts. each; $7.50 per dozen or $60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

FOR SALE—Three-banded Italian queens. Nuclei a specialty. My stock will please you, as it has others. Let me book your order for spring delivery. Write for circular and price list. J. L. Leath, Corinth, Miss.

FOR SALE—Bees in 2-lb. pkgs. Build up your weak colonies and make your increase by ordering young bees from the South. Price, per pkg. $1.75. Untested young Italian queens, each, 75c. Bees are free from disease, and safe delivery guaranteed.
Irish & Gressman, Jesup, Ga.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons, Boyd, Ky.

GOLDEN and 3-banded Italian and Carniolan queens, ready to ship after April 1st. Tested, $1.00; 3 to 6, 95c each; 6 to 12 or more, 90c each. Untested, 75c each; 3 to 6, 70c each; 6 or more, 65c. Bees, per lb., $1.50; Nuclei, per frame, $1.50. C. B. Bankston,
Buffalo, Leon Co., Tex.

QUEENS from my honey-gathering stock 3 and 5 band Italians. Bred in separate yards. Queens the rest of the season—one, 75c; six, $4.00; 12, $7.00; 25, $13. Safe arrival and satisfaction guarannteed.
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PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
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155 Schiele Ave., San Jose, Calif.

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FOR SALE—Light extracted honey, clover and basswood blend, in any style packages. Write for prices. Sample, 10 cents, which may apply on order. M. C. Silsbee,
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FOR SALE—Well ripened and mild flavored extracted honey, two 60-pound cans to case, white, 7c; amber, 6c per lb. Amber put up in pails, six 10-lb. or twelve 5-lb. for $6.00. Fall comb honey, No. 1, $3.00 per case; No. 2, $2.75; No. 3, $2.50 per case of 24 section, six cases to carrier. H. G. Quirin, Bellevue, Ohio

FOR SALE — Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

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WANTED—(by young man) a position for 1916 in an apiary. Have had five years experience with a small apiary. Also taking a course in apiculture. Age 19 years.
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FOR SALE — Friction-top pails, 5-lb. size, per 100, $4 50; 500, $21.25; 10-lb. size per 100, $6.25; 500, $30. Low prices on other sizes in bulk. Also furnished in re-shipping cases. Shipped from Chicago.
A. G. Woodman Co., Grand Rapids, Mich.

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Hamilton, Ill.

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FOR SALE—Why not locate your apiary in Calif.? We will supply the bees, fixtures and locations in the finest honey-producing districts, and sell one or more apiaries on easy terms of payment. Write us.
Spencer Apiaries Co., Ventura, Calif.

BACK NUMBERS of the American Bee Journal wanted. We have several calls for back numbers of the Bee Journal, and are offering any assistance possible to readers who wish to secure back numbers to complete their sets. While full years are wanted in most cases, we occasionally have a call for a single number. If you have back numbers of the Journal which you will sell, write us with full information as to the dates of all copies on hand. Some copies wanted at once are as follows: Vol. 35, No 51; Vol. 28, No. 48; Vol. 39, No 14; Vol. 40, Nos. 1, 2, and 21; Vol. 41, No. 33; Vol. 42, Nos. 1, 2, 36 and 52; Vol. 43, No. 46. American Bee Journal,
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HONEY AND BEESWAX

CHICAGO, Dec. 18.—Trade in honey at the present time is quiet. Retailers having loaded up for the holiday season, there will not be much of a call before the middle of the coming month. Prices are without material change, ranging at 15@16c per pound for the two highest grades, 12@13c per pound for the ambers. Light weight sections are preferred when well attached to the wood. White extracted ranges from 7@9c per pound, according to kind and condition, but very little of it is selling at over 8c per pound in a small way. Large lots can be bought at lower prices. Amber grades range at from 5@6c per pound, with some high flavored and desirable lots at 7c per pound. Beeswax 28@30c per pound.
R. A. BURNETT & CO.

CINCINNATI, Dec. 7.—The demand for honey is slacking up somewhat, which is natural around the holidays. We are selling No. 1 white comb honey from $3 65 to $4.00 per case. Lower grades are not wanted in this market at any price. White extracted honey is selling from 7@10c a pound, according to the quantity and quality purchased. Amber honey from 5@6½c a pound. For choice bright yellow beeswax we are paying 28c a pound. THE FRED W. MUTH CO.

NEW YORK, Dec. 18.—There is very little demand at present for either comb or extracted honey, and prices are ruling about the same as in our former report, with plenty of supply coming in of all kinds.
HILDRETH & SEGELKEN.

INDIANAPOLIS, Dec. 18. — This market is well supplied with honey, especially comb honey, although we look for quite a demand in the next 30 days, as the jobbers and wholesalers will have very little on hand at that time. With the approach of holidays the market usually shows a lack of vitality. No. 1 choice white comb is selling at $3 75 to $4.00 per case; No. 2 white comb, $3.50 per case. Extracted honey is bringing 9@11c. We are offering 28c cash or 30c in trade for good average wax delivered here.
W. S. POUDER

DENVER, Dec. 10.—The new crop of comb honey is selling locally at the following prices: Fancy, $3.60 per case of 24 sections; No. 1, $3.38, and No. 2, $3.15. Local prices on extracted honey unchanged, namely white, 8½@8¾c; light amber, 8@8¼c; amber, 7@8c, demand light. We pay 25c per pound in cash and 27c per pound in trade for clean yellow beeswax delivered to us here.
THE COLO. HONEY-PRODUCERS' ASS'N.
Frank Rauchfuss, *Mgr.*

LOS ANGELES, Dec. 19.—The market quotations on California honey are as follows: White extracted honey 6c per pound; light amber, 4c. Beeswax, 25c. Fancy white comb honey, $2.75 per case—all f. o. b. Coast.
HAMILTON & MENDERSON.

KANSAS CITY MO., Dec. 14 —The supply of both comb and extracted honey is good and the demand only fair. We think the mild weather has something to do with the light demand. We quote as follows: No. 1 white comb honey, 24 section cases, $3 15 to $3 25; No. 2, $2.75 to $3.00; No. 1 amber comb honey, $3.00 to $3.10; No. 2, $2.50 to $3 00. White extracted, per pound, 7½@8c; amber, 5½@7c. No. 1 beeswax, 28c; No 2, 25c per pound.
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American Bee Journal, Hamilton, Illinois

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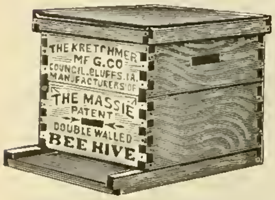

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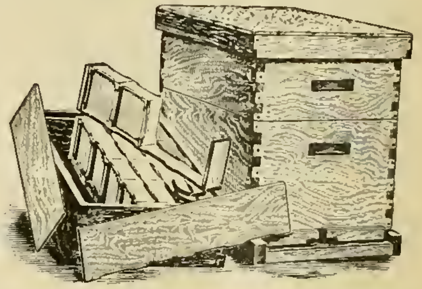

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For description of Review Queen, see another column. Address with remittance

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American Bee Journal

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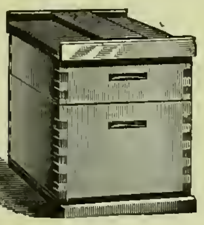

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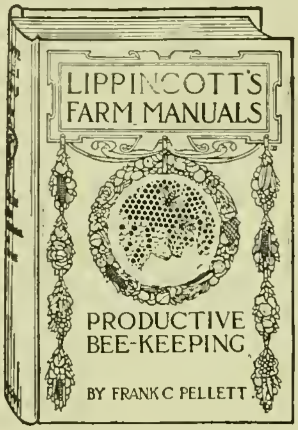

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FEBRUARY, 1916

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1 " " " " " "	1.50
2 " " " " " "	2.00

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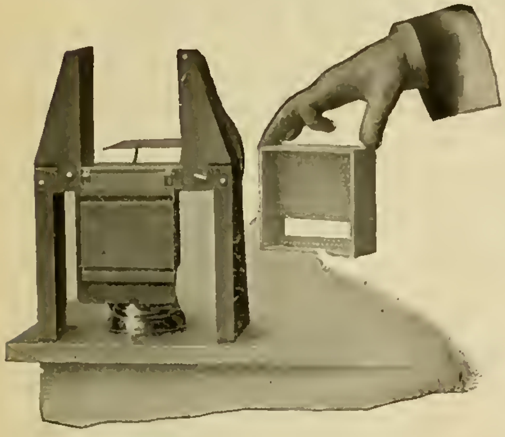

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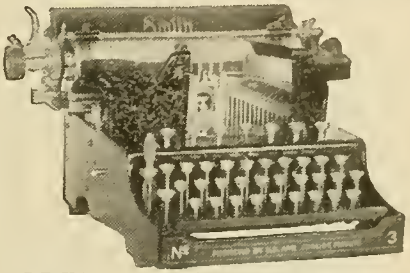

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We guarantee safe arrival, freedom from disease, pure mating, no inbreeding, and your money refunded if not satisfied.

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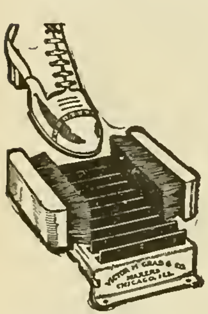

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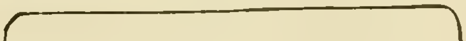

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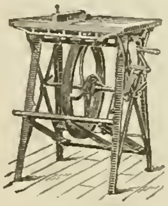

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Third—A system of crop reports that will give accurate, detailed, and trustworthy information as to crop conditions in all sections promptly and intelligently.

Fourth—An efficient method of presenting facts and reasons for the wider use of honey in cooking, in the arts, manufactures, and on the table, to the people who who would use it if they knew.

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Two whole pages of **INSTRUCTIONS TO BEEKEEPERS** by **C. P. DADANT,** will be found interesting to the old beekeepers as well as the new.

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AMERICAN BEE JOURNAL

Vol. LVI.—No. 2 HAMILTON, ILL., FEBRUARY, 1916 MONTHLY, $1.00 A YEAR

Beekeeping at Washington

What Uncle Sam is Doing for the Beekeeper

While the impression prevails that beekeeping is an old business, and although the bees have long been robbed of their honey, practical beekeeping is the newest among agricultural activities except fur-farming. Several of the men who assisted in establishing the new industry are still living and the others were well known to men still among us.

In 1851 Langstroth invented the movable-frame hive which made beekeeping commercially possible. This invention was later followed by the extractor and comb-foundation. At the most, beekeeping cannot be said to have been a commercial possibility for more than a half century. Under these circumstances, it is not surprising that we still have much to learn about bees and it is fortunate for the beekeepers that the Government has established a laboratory for the purpose of investigating their peculiar problems. A representative of the American Bee Journal recently visited the Government laboratory at Drummond, Maryland, near Washington, for the purpose of learning something of the work in hand, and of placing before our readers a statement of what has been done there and what results are likely to come from future activities.

LABORATORY FROM THE STREET

GEORGE S. DEMUTH

The results already accomplished are of far-reaching value. We often hear beekeepers remark that scientists are not practical. While in a sense this is true, every scientific discovery has a practical application and even practical subjects must be studied scientifically. Franklin was supposed to be dealing with frivolous things when he experimented with a silk cord and a key attached to his kite, but our telephone, telegraph, electric light, electric railways and other modern conveniences are practical applications of his discoveries.

Ten years ago, little was known about bee-diseases. Beekeepers had learned that a colony could be rid of foulbrood by the shaking treatment. But there was no definite way of determining the exact nature of the disease. Dr. E. F. Phillips took charge of the work. The first thing was to learn the distribution of the diseases, which he undertook in person. While American foulbrood was known to be widely spread, European foulbrood, then called "black brood," was known in only a few localities. The

UNCLE SAM'S BEE DEPARTMENT EMPLOYEES
Geo. S. Demuth, Miss Duckett, E. G. Carr, Miss Armstrong, E. F. Phillips, Jas. A. Nelson, A. H. McCray

presence of both diseases was found over wide areas. The Department provided facilities for examination of samples of suspected brood and thousands of samples coming from every State in the Union and even from many foreign countries have been examined. In some of the States, it was with the information thus gained that the beekeepers were able to go before their State Legislatures and show the need of apiary inspection laws and efficient education.

Dr. G. F. White in the Government laboratories, established the fact that **Bacillus larvae** is the cause of American foulbrood and **Bacillus pluton** the probable cause of European foulbrood. Until recently it was supposed that **Bacillus alvei** is the cause of the former disease. Dr. White has also given us positive information in a special bulletin, No. 92, on the temperature required to destroy the germs of these diseases. The nature of Sacbrood, formerly known as Pickled-brood, was also worked out by him in this office.

When the Department undertook the study of the wintering problem in 1912, little was known of the real temperature conditions within the hive during the winter months. The experiments made by Doctor Phillips and Mr. Geo. S. Demuth have upset some of the old notions about wintering and have confirmed the best methods to prepare the bees for winter with a reasonable certainty of results. In the beginning few dreamed of the tremendous activity within the cluster during severe weather and, until their observations had been confirmed by impartial observers, doubt was expressed in some quarters as to the accuracy of their work. Unnecessary activity during winter greatly impairs the strength of the colony and it is very important so to protect the bees as to avoid the conditions that make such activity necessary. Now that some of the underlying principles are understood, experiments in various methods of making the best practical application of them are being continued. This work is expected to occupy several years yet.

Few persons know of the extensive work done along this line. About a half million temperature readings have been recorded, at intervals ranging from every half minute to every half hour, according to the special problem under investigation. Since readings were continued during the night as well as by day for many weeks at a time, some one had to remain constantly at hand to make the records.

The winter losses, taking the country as a whole, probably exceed fifteen percent and this great drain on our resources can be stopped only by better wintering methods. Accurate information concerning the condition of the bees during the cold months is obviously necessary.

Dr. McCray Examining Diseased Brood

If the stockman knew as little about the animals with which he deals as is known about the honeybee, the scientific care and feeding of animals, now practiced, would be impossible. For example, little is known about the digestive processes of the bee, practically nothing of its excretions and many details of its finer anatomy still are to be worked out. The disease or diseases known as constipation, paralysis, May disease, and Isle-of-Wight disease, which may be variations of one disease or varied diseases of similar aspect need the attention of scientists, for we are still in the dark about them and there is not yet a positive method of cure or prevention. Even the things about which we know most are imperfectly understood. In addition to the more practical problems already mentioned, an effort is being made at Washington

DR. JAMES A NELSON AT WORK IN HIS LABORATORY to work out as many of these details as time and opportunity will permit. The bulletin on "Anatomy of the Honeybee" by Mr. R. E. Snodgrass, gives additions to our knowledge of the subject and corrects commonly credited errors. After Mr. Snodgrass had finished his fundamental work on anatomy of the mature insect, it was followed by the monumental work on the development in the egg by Dr. Jas. A. Nelson, which was reviewed in the January number of the American Bee Journal. The work by Dr. N. E. McIndoo on "The Olfactory Sense of the Bee" has already been discussed in this Journal. It will be recalled that Doctor McIndoo locates the olfactory organs on the bases of the wings and legs and not on the antennae, as commonly supposed. He claims this to be the case with many other insects also.

"The Manipulation of the Wax Scales of the Honey Bee" and "The Behavior of the Honey Bee in Pollen Collecting," two papers by Dr. D. B. Casteel have attracted wide attention and have corrected some wrong impressions concerning the activities of the bees. Doctor Casteel found that the "wax-shears" on the hind legs of the bees have nothing to do with wax.

E. G. CARR

Surveys of beekeeping conditions and possibilities in Porto Rico and Hawaii by Doctor Phillips and in Massachusetts by Dr. B. N. Gates have been published and a similar survey of the conditions in one of the southern States has recently been made by Mr. E. G. Carr.

Several practical bulletins, in addition to those already mentioned, have been widely circulated. A general bulletin on beekeeping has had a wide circulation and bulletins have been issued on queen-rearing and extracted honey production. Another bulletin, on the production of comb-honey, by Mr. Geo. S. Demuth, in addition to a very careful outline of the essentials in comb-honey production, contains a logical discussion of the vital question of swarm control in this special connection.

THEY PRACTICE WHAT THEY PREACH

The bulletins on the chemical analysis of honey, on which the enforcement of the pure food laws for honey adulteration is based, and the bulletin on uses of honey in cooking and baking, which is so deservedly popular just now, were prepared in other Bureaus within the Department, probably with some stimulation from the bee-men of the Bureau of Entomology. The bulletin on sweet clover, although not directly a beekeeping subject, has been very helpful to the beekeepers, since with the Department's endorsement of this plant as a forage plant, it cannot now be considered as a weed.

THE PEOPLE WHO ARE DOING THE WORK

At present there are five men and two women, in the Drummond laboratory, engaged in the investigations in bee-culture. Several of those whose names have already been mentioned in connection with the various bulletins have left the Department or are no longer in the special branch charged with investigations in this special line. A short sketch of those now in the work follows:

DR. E. F. PHILLIPS.

Doctor Phillips is a well known figure at conventions and needs no introduction to many of our readers. His extensive investigations have kept him prominently before the beekeepers for several years past. A successful investigator needs thorough training, great patience and an open mind. All these qualifications our friend possesses in marked degree. We know so many things that "aint so" that the research student must expect many objections when new theories are advanced. Time always establishes the truth or falsity of new

DR. PHILLIPS AT HIS DESK

GOVERNMENT APIARY AT COLLEGE PARK, MD.

positions. Doctor Phillips has never yet been proven wrong in any important theory which he has advanced.

DR. JAMES A. NELSON.

Who is engaged in a study of the development of the bee, is a well-trained zoologist and entomologist, having graduated from Kenyon College, taking his doctor's degree at the University of Pennsylvania. Later he spent four years in a study of entomology at Cornell University. Doctor Nelson is a good photographer, an enthusiastic naturalist, and a patient investigator. Those who have seen his new book, previously mentioned in this journal, know that he is not afraid of undertaking large jobs, for the study of the development of the bee in the egg took several years of patient work.

MR. GEORGE S. DEMUTH.

Mr. Geo. S. Demuth is engaged with Doctor Phillips in the investigation of the winter problem. Mr. Demuth is a practical beekeeper, having had for several years care of three apiaries run for comb-honey in Indiana, in which State he later served as Apiary Inspector. He is a man of great patience in investigation and is in no hurry to draw conclusions until he has a mass of facts and figures that would stagger most of us. His bulletin on Comb-Honey, already mentioned is a very able discussion of this subject.

DR. ARTHUR H. MC CRAY.

Who is now doing the bacteriological work at Drummond, is a graduate in both veterinary and human medicine. He has for several years past examined the samples of diseased and suspected brood which have been sent in by beekeepers from all parts of the country . His work is much like other bacteriological work but special materials are needed to make cultures of the bacteria which produce disease. For this reason a special equipment not found in most laboratories of this kind has been provided. Doctor McCray kept bees as a boy and grew up in the business, so he is very much at home in his work.

MR. E. G. CARR.

is known to many of our readers. He is in the Government work temporarily and will later return to his work as Apiary Inspector of New Jersey. He began work with the Department on October 1st and has been engaged in a study of the present conditions and future possibilities of beekeeping in one of the southern States. It takes an optimist to do this work and Mr. Carr has this qualification. He assured the writer that there is a wonderful field for development in our industry in that section. The South already produces considerable honey which is practically all consumed locally and considerable is shipped in. It is hard for us to picture a region in which ninety-five percent of the bees are in box-hives and a missionary preaching the gospel of bees is needed.

The clerical work of the office is done by Miss Marian Armstrong, Miss Myrtle Duckett assists in the charting and preparation of the data.

A word about the laboratory and grounds may be of interest. The present quarters consist of a leased residence located in a lot of about three-quarters of an acre. The natural beauty of the location is supplemented by extensive plantings of ornamental shrubs. One thing that impressed itself on the writer is the danger of keeping the records of years of work in a building that is not fire-proof. The Government should provide an adequate fire-proof laboratory to house this office. Canada is putting up a building for beekeeping work. American beekeepers should not take a back seat to our Canadian friends in this matter and we must have our Washington headquarters properly housed.

THE FUTURE.

It would take a prophet to tell what the Government work will mean to beekeepers in the future. If it continues along lines on which these men have worked, we will continue to get results of practical value.

Without wishing to dictate we suggest that extension work among beekeepers is needed so that those in the business may learn the best methods. Education will bring results in beekeeping as in every other line of activity. A larger appropriation is needed for this purpose.

When the general Government and the various States take up beekeeping as it should be, the industry will grow still faster than it did in the past fifty or sixty years and there will be more professional beekeepers and less bunglers.

THE DRUMMOND APIARY IN SUMMER

The Capping Can—Has it Any Value?

BY C. P. DADANT.

"I WILL never forget the reply that I got from a beekeeper in Cuba when I asked him why it was that no one ever used the Dadant uncapping can, the price of which is $8.00. He replied that no one but suckers ever bought them. And I think he answered right. (With *apologies* to Dadant & Sons).

"For a capping can I use two kerosene tins, one above the other, the bottom of the upper one perforated. Place a board or sheet of tin, with cleats across the two ends, in the bottom of the upper tin, and I don't know of anything that will better answer the purpose......The only fault with a capping can of this kind is that they are small, but as the tins cost only 5 cents each, the apiarist can have plenty of them. Twenty was about the right number for me."—W. J. YOUNG, in the *Western Honey Bee*, October, 1915.

The "capping can," improperly called "uncapping can," is the only implement ever devised by the writer. It never was patented, and the Dadants never manufactured it, so the *apology* was unnecessary. The Western Honey Bee is a very practical bee paper, and its "suckers" are probably few. Living in the "Sucker State" we have perhaps more around us. But we dislike to think that those of our readers who keep bees in California and read the Western Honey Bee also, might try to follow the method of friend Young and keep 20 tin vessels for a capping can, to avoid the reputation of "suckers."

In 1878, after 10 years' use of the honey extractor, we had not yet found a neat and practical method of draining the cappings and disposing of them. We successively used a big bread pan, a wash boiler, a tub with sieve and a tin-lined box made of pine lumber. None of these implements was handy. I wanted a light, capacious vessel, capable of holding the cappings of an entire day's extracting, draining them at the same time. I also wanted to be able to empty this readily of its cappings as well as of the honey, haul it about in a wagon, full or empty, or leave the cappings in for a few days or weeks if advisable.

ORIGINAL CAPPING CAN AFTER 37 YEARS USE

Our original honey extractor was made at home, immediately after seeing the description of the invention in the American Bee Journal, in April, 1868. It was as cumbrous and clumsy a machine as that shown in the cut in that issue of the journal, under the lengthy and unmelodious name of "honey-emptying machine." This awkward machine we were still using in 1878.

A gentleman by the name of Everett began manufacturing improved machines in Toledo, and called on us. We gave him an order for an extractor or two and then I described to him a plan of my own to erect a capping-holder, a capping can, to consist of two round cans inside each other, the outer one just like a large extractor can, the inner one about a foot shallower, with flaring walls, a strong sieve instead of bottom, and resting on the upper inner edge of the outer can, by a heavy rim. He caught upon the idea and sent us a receptacle as described, with additional features to strengthen it, in the shape of a braced pivot, in the center, supporting the center of the screen of the inner vessel. A honey-gate at the bottom permits drawing off the honey.

The original capping can cost us $14. They are now made of two vessels one above the other and less expensive, else a still less number of "suckers" would use them. But this can was worth all it cost, for we are still using it, after 37 years, which makes the annual cost, exclusive of interest, 38 cents per year. We show it in the adjoining half-tone. It is much battered, having traveled hundreds of times, in a wagon, over rough hilly roads, while filled with cappings and honey draining from them. Any "sucker," who, like us, extracts tens of thousands of pounds of honey each year, can well afford two or three such capping cans. We have several in use at present. The original one has been repaired slightly a few times, but will probably last as long as any of them, for it was made out of "old style tin."

Our second capping can was made by a manufacturer of low-priced extractors. It was so weak that it broke down under its load of cappings the very first time we hauled it home with a part of the cappings of a day's extracting. On receiving our complaint, the manufacturer, who might have known better, made the remark that he had not thought of the need of any strength in such an implement.

Stationary capping tanks do not suit us. They are usually made of wood, tin-lined, and are so heavy and cumbrous that it is out of the question to haul them back and forth to outapiaries. The cappings cannot be poured out, but have to be dipped out. The "capping melter" is objectionable to us, on account of the heat it produces. Honey extracting here is nearly always done in hot weather, and such an implement makes the room still hotter. Besides, the honey which is run out of heated cappings is colored, loses its fine flavor and becomes a third rate article, unfit to be mixed with the crop.

ORIGINAL CAPPING CAN WITH STRAINER REMOVED

Our large capping can, empty, weighs 40 pounds and is easily handled. When full it requires two strong men to carry it, and load it or unload it.

A light wooden frame, notched to fit, and set across the top of the capping can, permits the holding of the frame and the uncapping of the comb without injury to a sharp-edge honey-knife. The filled can is allowed to retain the cappings overnight. By that time the honey is pretty well drained out unless the night has been cool. If any honey remains, the contents are dumped into a large receptacle such as an old empty can or a tank, to be worked over at the end of the season. So each day we do the uncapping over a freshly emptied can. When the job is finished, such cappings as may need further draining are put back into the capping can and remain there as long as convenient. At the end of the season the cappings are washed to remove all traces of sweetness and the water obtained is passed through a fine sieve and used to make vinegar. Thus nothing is lost and quite a number of "suckers" are following this method with profit.

Hamilton, Ill.

* * *

L. C. Root Improving.—Mr. L. C. Root son-in-law and old partner of the late Moses Quinby, and reviser of the Quinby book is successfully recovering from a serious operation at his home in Stamford, Conn. Mr. Root recently celebrated his 75th birthday. He is a great optimist, and this has probably been greatly in his favor in speeding his recovery.

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BEE JOURNAL

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C. P. Dadant, Editor.
Dr. C. C. Miller, Associate Editor.

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THE EDITOR'S VIEWPOINT

Our Advertisers

In accepting advertisements from dealers in bee-supplies, as well as from other parties who have various articles to sell, the American Bee Journal tries in every way to prevent unreliable advertisers from using its columns. It sometimes happens, however, that advertisers do not live up to their contracts, and for some reason or other our readers have just cause for complaint. In order that we may find out who these advertisers are, we ask that our subscribers write us promptly, giving us full information in the first letter. This will give us an opportunity to either get justice for you or discontinue the objectionable advertisement.

We do not guarantee the solvency of any one, but we do insist that all of our advertisers give our readers full value received. If our subscribers will cooperate with us in this matter, we can eliminate such advertisements as do not give satisfaction, and thus benefit our reliable advertisers, our readers and the American Bee Journal itself.

Short Course for Michigan Beekeepers

The Michigan Agricultural College, East Lansing, Mich., wishes to announce a "Beekeepers' Week," March 13 to 18, inclusive. This is a new course and is designed to meet the needs of a large number of people who keep bees, but who have never had an opportunity to become acquainted with the newer and more profitable systems of management.

Seven or eight lectures will be given daily, and expert beekeepers, including Mr. Morley Pettit, Provincial Apiarist of Ontario, will address the class. While it will not be possible to cover the whole field of beekeeping, the fundamental principles will be thoroughly discussed. It is hoped that a large number of beekeepers will take advantage of this new course, so that it may become a regular feature.

There are no fees and no age limit, ladies are as welcome as the men.

All beekeepers desiring to obtain more knowledge of beekeeping should apply to the Department of Entomology, East Lansing, Mich., for further particulars and program.

Apple Aphis Carrying Fire Blight Among Apples and Pears

Prof. L. A. Kenoyer, of the Iowa Agricultural College, sends the following note:

"During the last three years, Prof. J. H. Merrill, of Kansas, has made observations and experiments which show the apple aphis or plant louse to be an important factor in carring fire-blight among apples and pears. Further work is to be carried on, and the bee may be vindicated."

The above item suggests that it may yet be shown that blight is only spread by insects that are capable of a direct inoculation, in the same way that mosquitoes spread malaria among human beings. The fact that germs of fire-blight have been found on the bee does not by any means prove that she is capable of transmitting the disease to the trees whose flowers she visits in search of nectar. The aphis lives by sucking the sap from trees, much as mosquitoes draw blood from living animals, and it can readily be seen how that insect might carry germs of blight from one tree to another. We are glad that Prof. Merrill is investigating this subject and will await with interest the result of his investigations.

Beekeeping at the Iowa College of Agriculture

In our August number an article by Mr. Pellett told something of the men who have charge of the work in bee-culture at the Iowa College of Agriculture and of the plans for the future. At that time it was said, "The Iowa college is one of the best, and no part of the work will long be permitted to lag behind that of other States."

Since that article was printed courses in apiculture have been established in several State institutions. The hopes of the Iowa beekeepers are being realized more quickly than they expected, for a four-year course leading to a degree of Bachelor of Science in apiculture at Ames is now announced. We understand that this is the first agricultural college to offer a degree in apiculture.

One of the first things that the Iowa Beekeepers' Association set out to accomplish was the establishment of this course. The association is only four years old and has already succeeded. Of course there are, as yet, no special buildings such as the older courses have, no extensive equipment, and other facilities which only time can supply, but these will soon be forthcoming, when the work is under way.

The demand for trained men in beekeeping is now greater than the supply and this course will probably be very popular among those who expect to take up scientific work, as well as those who are anxious to secure practical training.

Inspection work will soon be placed on a better basis, and the requirements of inspectors raised and their compensation increased accordingly. All of these things have been kept in mind by the Iowa authorities in arranging a course which is designed to fit men to fill positions as research assistants, teachers, or to operate commercial apiaries.

The course as outlined follows:

COURSE IN INDUSTRIAL SCIENCE LEADING TO THE DEGREE OF BACHELOR OF SCIENCE (IN APICULTURE).

FRESHMAN YEAR.

First Semester	*Credits*
Botany, Chemistry or Zoology	3-5
English	3-4
Mathematics	5
German	3-5
Elective	3

Second Semester	*Credits*
Botany, Chemistry or Zoology	3-5
English	3
Mathematics	3
German	3-5
History	2
Elective	1

SOPHOMORE YEAR

First Semester	*Credits*
General Apiculture	4
*Botany, Zoology, Chemistry	4⅓-5
Modern Language	3
English	2

Second Semester	*Credits*
General Apiculture	4
Botany, Zoology, Chemistry	4⅓-5
Modern Language	3
Physics	3

*The student will take one of these courses in each term of the Freshman year and the other two in the Sophomore year.

JUNIOR YEAR.

During the Junior year the student who wishes to specialize in beekeeping should take Entomology, Botany, Bacteriology, and Chemistry, and enough of other courses to total 16 hours credit in each semester of the college year.

SENIOR YEAR.

During the Senior year the student will take research courses in beekeeping and apiary inspection and other courses offered in the college to total 16 hours credit in each semester of the college year.

Persons wishing information in detail as to the work offered should write to the Registrar, Iowa State College, Ames, Iowa, for the 1915-16 catalog and information in regard to courses in apiculture.

When it was learned at the Iowa convention that this course had been established, a special letter was written to Pres. R. A. Pearson and signed by most of those in attendance in that session. It is understood that the president has interested himself personally in the success of this new work, and the beekeepers wished to convey to him evidence of appreciation of his efforts.

We congratulate the Iowa beekeepers on the recognition which the Iowa Agricultural College is extending to the industry. Prof. C. E. Bartholomew was elected president of the association when it was first announced, a year ago, that some work in beekeeping would be given. This was an expression of confidence in the institution and in Prof. Bartholomew that evidently has not been misplaced.

We hope to be able to give our readers some information concerning similar work in other States before long.

Distance Bees Fly for Honey

An interesting article on the above subject is given in Gleanings in Bee Culture for Dec. 1, by an experienced Florida apiarist, F. M. Baldwin. He states that, in his locality, "bees work over a radius of less than a mile." The Editor endorses this view, saying that bees seldom go over 1½ miles for harvest. However, he has seen bees occasionally over 3 miles from home.

His suggestion is that, bees having a long range of vision, they may be able to see the fields of blossoms far away, and that their flight may depend upon this. In the part of Florida inhabited by Mr. Baldwin, the country is level and covered with pines, swamp land, etc., and this is the reason why the range of flight is short.

Having some curiosity as to the opinions expressed on this much debated subject by former writers, we hunted all references to it in the American Bee Journal, back to 1883, a period of 32 years. A greater variety of expressions could not be found on many subjects. Some leading beekeepers sustain the extended flight. Ira Barber, of New York, comes first with the statement that bees work profitably at from 4 to 10 miles. Doolittle, Gallup, J. E. Pond, J. D. Enos, of California, Edwin France (father of N. E. France) hold that they can readily harvest as far as 6 miles. A Texas apiarist, L. B. Smith, wrote repeatedly that his bees, by preference, worked at 4 miles rather than at a mile from the hive. He acknowledges, however, that the *lay* of the country has much to do with the extent of their flight.

On the other hand, many large apiarists do not think their bees work profitably beyond 1½ to 2 miles, some reducing that distance to 1 mile or less. Adam Grimm, a man who became wealthy in extensive beekeeping, advised the placing of outapiaries 3 miles away. J. E. Pond, though holding that they could go 6 miles, preferred to have the field inside of a mile. Hutchinson did not think they travel over 3 miles. J. L. Byer and hosts of others don't want the blossoms over 2½ miles. The Victorian apiarists in convention thought apiaries should be located 3 miles apart. The Missouri State beekeepers, in 1892, at their meeting, wanted the field within 1½ miles, for profitable harvest. The Chicago-Northwestern, in 1907, discussed the subject, and the speakers limited the profitable range to 2½ miles.

In very hilly countries, like Switzerland, beekeepers invariably hold the view of a very limited range, not to exceed 1¼ miles, and even limit the possibility of matings to that distance, in spite of the stronger wing power of the drones, evidently owing to the ruggedness of their land.

In our personal experience, with apiaries located apart at distances varying from 3 to 10 miles, we have seen such contrast in the yields that we believe the best paying crops are gathered at *very short range*, for with apiaries 4 miles apart the crop has often been quite different in both quantity and quality.

For all that, it is out of the question to dispute the experiences of men like Doolittle, Enos, France, etc. We must seek the differences in different conditions. To the suggestion of Editor Root, who believes bees can see fields of flowers several miles away, when the configuration of the country permits it, we will add the still more plausible one, to our mind, of their being able to smell the honey in the direction from whence the wind comes. Why not? Human beings can detect odors a mile or more away. We are located on the bluff of the Mississippi river. Diagonally across the stream, at Keokuk, Iowa, is a pickle factory, over a mile and a half in straight line. In summer, the sour odor of the pickling vats is wafted over the housetops and across the immense stream and is plainly discernible. When we reflect that bees are most admirably adapted to the requirements of their pursuit, we should not be astonished if they detect the odor of strong-scented bloom, such as basswood or buckwheat, several miles away. Moreover, a continuous field of bloom may lead them on.

The configuration of the country has additional influence upon the range of flight. If there is bloom in the direction of the wind, not only must the bees find it easily, but the wind which brought the stimulus also helps them back towards the hive.

We are tempted to suggest the possibility of some climates being more favorable to long flights, owing to a lesser atmospheric pressure or greater dryness of the air. Several Texas reports indicate that in the broad plains of that State long flights with profitable results may be more likely than in many other spots.

As the distance traveled by bees is of great importance in establishing apiaries, prospective beekeepers should look into the matter in their own locality. In countries where flowers abound, large apiaries may be kept close together. If a range of only 2 miles in any direction is of common occurrence, this still gives the bees of an apiary a circle 4 miles in diameter, amounting in round numbers to about 8000 acres. A range of 4 miles in any direction would give them over 30,000 acres. If bees commonly traveled 4 miles for honey, there would be no need of outapiaries, for a thousand colonies could feel sure of an abundant harvest, if the country was at all favorable to honey-producing plants.

Dr. Miller has favored the short distance reach in his former writings. We asked him to give us his latest views and they follow. C. P. D.

I have had no experience lately as to the matter of distance bees will travel to gather honey, and for that matter never had, but I have watched pretty closely all that has been written on the subject, and have come to have less faith than I formerly had in long-distance gathering. Even though it should be clearly proven that a chance bee went 5 or 7 miles from home and returned, that is no proof that it could work *profitably* half that distance. F. M. Baldwin's article is illuminating, and like enough Editor Root's views, page 965, are not far out of the way. But we must be a little on our guard lest the pendulum should swing too far the other way, shortening the flight of the bee unnecessarily.

The whole subject is one of very great importance, and we should welcome every real item of information regarding it. It isn't altogether a matter of mere distance. Other factors have a bearing, and possibly some that have never been thought of. Editor Root springs a new one when he suggests "that the flight of bees in quest of nectar is dependent on the distance they can see pasturage." It is easier for me to believe that bees might smell a field of clover 5 miles away than that they could see it at that distance. Ever watch bees at work on a basswood tree? You'll see the bees at one side of the tree flying back and forth perhaps within a yard or two of the foliage, and none on the opposite side. No matter how slight the breeze, the bees will be seen on the lee side, the side from which the breeze wafts the odor. But then if we say bees go by odor, we ought to expect a cloud of bees always about a field of red clover, for the odor of it is great. So there you are. Just between you and me, I don't know much about bees anyway. C. C. M.

Beekeeping Simplified

This is the title of a small English work, of 48 pages, with 57 cuts, by W. Herrod-Hempsall, Editor of the British Bee Journal. Price 6*d*.

This little work contains the rudiments of beekeeping with instructions for starting an apiary in the modern way. The straw skep is given a mention, but with the very explicit statement that the old methods are "strongly deprecated." The specially interesting part of this booklet, for an American, is that relating to taking the bees to the heather, a specially ventilated hive being advised for the purpose. Heather honey is mentioned as so "gelatinous" as impossible to extract by centrifugal force. So a method of pressing is devised and the cut of a peculiarly grooved press shown.

That bees without combs are not shipped so far in Great Britain as in the United States is evidenced by the method given of confining them, by "tying over the receptacle containing them a piece of cheese straining cloth." In long confinements such as necessary here, the bees would pull the cloth apart and liberate themselves.

The book is well gotten up, finely printed and worth fully its price.

California Beekeeping

The Western Honey Bee, published at Covina, Calif., in its December number publishes an appeal to California beekeepers to sustain that magazine. It is a good journal, published by a practical man, and should have the support of beekeepers on the Pacific Coast, for a publication of its character is necessary there. The present low prices of honey in California will certainly not last, if the history of the past is a criterion for the future. Those who have honey in abundance and can afford to hold it will secure a better price before long. In the years of plenty it is well to store product for the years of scarcity. The story of Joseph and the seven years of plenty and the seven years of famine still proves true in modern days.

Dr. C. C. Miller's Personal Recollections

Life Story of America's Best Known Beekeeper

(Continued from January number.)

THROUGH a good part of the two years my rising hour was 4 a.m., when I began study. I got a sort of exercise by standing a considerable part of the time while studying.

That my mind might not be distracted from study, I determined to have nothing to do with female society. I do not recall talking with any woman or girl except with Mrs. Nott, the wife of the president of the college, Eliphalet Nott, D. D. I sang part of the time in the choir of the Methodist church. My seat happened to be next that of a young woman, and if she asked me about the hymn we were to sing, I pointed with my finger to the place, but I never spoke.

The financial problem was perhaps the most difficult. When I arrived at college I had less than $70—I think it was $68 and some cents. I did anything and everything I could find to do to add to that sum, or rather to keep it from being exhausted, for it was more by keeping down expenses than by earning money that I managed to get through. I had the benefit of a public fund which made my tuition low. I do not remember that I bought any clothing. I had one Sunday suit that lasted me, and I was fairly provided for every day with serviceable clothing, albeit some of it was a bit bizarre, such as trousers checked green and red of homemade linsey-woolsey, and a wammus of substantial homemade flannel such as money cannot buy nowadays. A wammus takes the place of a coat, being a sort of jacket with sleeves, hanging loosely down and coming perhaps 6 inches below the waist. Generally you do not let it hang down, but take hold of the two corners in front and tie them in a knot.

DR. MILLER AT 54

I peddled maps and books in vacation; taught singing-school; and among other things worked in what was called Capt. Jack's garden, a number of acres then in the rough, but afterward a place of beauty, at that time in the care of Prof. Jackson. One Sunday he got me to watch the garden against intruders. It was mostly woods, and I wandered about at ease, for no one intruded, and in my ramblings I came upon a little patch of strawberries, and I sampled all of them that were colored. Afterward I learned that one of the chief things I was in the garden for was to make sure that no one would disturb a small bed of Wilson's Albany strawberries, then an entirely new thing, which in after years I planted by the acre.

In some way, perhaps as a pastime, I had learned to write German text, which now stood me in good stead. I had the job of filling into the diplomas the names of most of the graduates of the two years. I got 50 cents for each name. It was close work, and very hard on the eyes, the work being done by an innumerable number of strokes with a fine steel pen on the greasy parchment.

But the greatest chance for economy was on my board bill. I boarded myself the whole time, and my rations were chosen not because well balanced, but because inexpensive. The staple article

THE MILLER HOME AT MARENGO, ILL.

was whole wheat boiled and eaten with milk, sometimes sweetened. A peck of wheat goes a long way, and is withal a wholesome food. Rice was sometimes used as a change, and I bought some bread.

I cannot now say just what my board cost, but at least some of the time it did not exceed 35 cents a week. I know that for a time I had a boarder at 50 cents a week. It was my cousin and classmate, John H. Miller. But when I gave him beef suet in place of butter for his bread, he struck, and I lost my boarder. If I had known enough to call it oleomargarine, it might have passed muster, but oleomargarine was then unknown, and he drew the line at beef suet.

It was optional with students whether to spend the third term senior at college or to teach. I chose teaching, and got $100 for teaching one term at an academy at Delhi, N. Y. That helped wonderfully, so that after having paid for my diploma and all other bills I left college with some $80 in my pocket. If I could have foreseen this I don't think I should have economized quite so severely; but I had a great horror of debt, and eagerly seized every opportunity either to earn money or economize, lest the opportunity might not come again, and so it happened that I left college with more money in my pocket than when I went there.

Throughout the two years I maintained maximum standing in my studies, and at commencement had the honor of delivering the German oration. I have little recollection what that oration was about, but when I think of the difficulty I now have in reading a German bee journal after years of practice I am constrained to believe that either the German oration was assigned me for some reason other than my proficiency in German, or else that there was poor material in the class from which to select a German orator. Even at that, I came near missing that part at commencement. My chum and I were in the habit of saying over a meaningless jingle, "Hops clops de kinny de trickel de raus kooma vas." Just a few days before commencement the class orators were ordered to appear before Dr. Nott to recite their several productions, with the alternative that those not yet fully prepared would not be allowed to take part at commencement. I started in on mine all right, but when near the end the whole thing left me entirely. I hesitated just an instant, and then promptly wound up with "Hops clops de kinny de trickel de raus kooma vas." Dr. Nott scowled and said, "We don't teach Dutch here." "That isn't Dutch," I answered, and Dr. Nott made no reply. I do not feel proud of the transaction, although I spoke my piece at commencement.

The thing of which I felt the proudest was securing Phi Beta Kappa, the highest attainable honor. Several others of the class, however, achieved the same thing.

After securing the degree of A. B., I was one of the teachers in the academy at Geneseo, N. Y., and then went to Johnstown, Pa., and began reading medicine with Dr. C. Sheridan. He was taken with the western land fever, and moved to Earlville, Ill., where he had bought a farm. So I went West, too, and was graduated an M. D. at Michigan University, Ann Arbor, Mich. By that time Dr. Sheridan had gone into partnership with Dr. Vosburg at Earlville, and upon graduation I also entered the firm. The principal business of a physician then and there was administering quinine for fever and ague. I was pretty well shaken up with the disease myself, and my ears were kept ringing with the heavy doses of quinine taken.

Rev. John Ustick was the pastor of the Presbyterian church to which I belonged at Earlville. At a meeting of Presbytery he was interviewed by Rev. Geo. F. Goodhue, pastor of a church at a place called Marengo, the said Mr. Goodhue being in search of a young physician to settle at Marengo. As a result, I trekked to Marengo, my outfit being a gaited saddle-horse and saddle and a large medical library, at least for a young man just beginning his career as a physician. For I had bought the whole of the library that Dr. Sheridan had accumulated when he had decided to quit practice. It may be remarked in passing that he afterward gave up the idea of farming, returned to Johnstown, and ended a long life of usefulness as a greatly beloved physician.

Dr. A. Hagar, the leading physician of Marengo, did not look with favor upon my settling in Marengo, and advised me to go West and find ground less occupied. Later, however, he became my warm friend, and remained so until the day of his death. He had a very extensive practice, extending 8 or 10 miles in all directions. Desirous to give up his longest rides, he began to throw them into my hands. That was, in a way, my undoing as a medical practitioner.

After having visited one of the long-distance patients, carefully considering the case, and prescribing to the best of my ability, I would mount my horse for a long ride home, perhaps in the middle of the night, and on the way misgivings would overtake me, and I would ruminate. "Have I, after all, understood the case? Any mistake might bring serious, perhaps fatal, results. Better look up carefully what is said in the books about it." Then after worrying the rest of the way home about it, I would consult the many authorities, decide that I had done the best thing, and then conclude to meet what other exigencies might arise, and do no more worrying. But the next visit I would go over the same experience again, question my fitness for such important responsibility, and finally the burden became so great that I felt obliged to get out from under it and give up the practice of medicine. It seemed like throwing away a good part of my life, for I had been faithful in preparation and was probably equipped better than the average.

(To be continued.)

Sweet Clover—Its Value to the Beekeeper

BY M. G. DADANT.

WE have seen sweet clover advance in the last few years from the position of a noxious weed to that of one of the best forage plants of the country, some claims being made

Fig. 66—Hon. Eugene Secor and a Yucca Blooming on His Lawn

that it is even superior to alfalfa. The farm papers have contained many articles extolling its value, giving proper soils, their preparation, methods of tillage, etc., in order to get the best results. Much has been said also of what may be expected from the plant.

What, however, is the *honey* value of sweet clover? Beekeepers have known for a long time that it is of benefit to the bees, that it yields enough honey for its influence to be noted, especially in certain seasons. But now that it is likely to have universal planting, that your bees or ours may regularly forage on many acres of sweet clover in bloom, let us enquire what we may expect. Will it be only a helper or will it yield a surplus? Will I able to depend upon it so that I may double the number of my colonies in each apiary, and may I be safe in starting apiaries any place throughout the country where much of this clover is planted?

In order to determine this beforehand, if possible, I submitted the proposition to some prominent beekeepers who have had considerable experience with it, many of whom are at present harvesting crops from it, and some of whom rely on it solely for surplus.

Replies came from the following States: Colorado, S. Dakota, Iowa, Illinois, Kentucky, and Alabama. Four general questions were asked as follows:

1. Does the soil on which sweet clover is grown influence the honey yield?
2. Is the yield affected by drouth or moisture, and how?
3. Is sweet clover a sure honey yielder or are there failures?
4. If you had 100 colonies within reach of 100 acres of blooming sweet clover what would you expect the yield to be in extracted honey?

The last question of course is hypothetical, but will give an idea of what is thought of its value.

INFLUENCE OF SOIL ON HONEY.

Without an exception all correspondents agree that soil has little effect on honey yield, except that sweet clover, of course, grows best on soil with plenty of lime, and we should reasonably expect honey-producing qualities to be best where growth was most favorable.

EFFECT OF DROUTH AND MOISTURE ON YIELD.

All agree that atmospheric conditions play a most important part in honey yield. Very probably the irrigated regions have the advantage in this respect, as the moisture can be in a large degree regulated to suit. "Dry, hot weather is best," says Wesley Foster, "with plenty of moisture through irrigation." This is confirmed by L. W. Benson, of Alabama, who thinks irrigated lands ideal, but for Alabama mentions as best "dry, hot weather with plenty of moisture at the roots of the plants." A. B. Brown, of Alabama, whose sole dependence is sweet clover, wants "a hot and sultry atmosphere with plenty of moisture in the ground." Others mention weather neither too dry nor too wet as better than either extreme.

IS SWEET CLOVER A SURE HONEY PRODUCER?

From the above points we deduce that sweet clover honey production varies much with variation in atmospheric conditions. I have yet to hear, however, of an absolute failure in Alabama. By this I mean a season where the bees starve with acres of blooming sweet clover within reach. In Illinois, however, the situation is different. We have, ourselves, observed seasons when the yield was nil. A. O. Heinzel, also of Illinois, reports that the plant generally yields; but he has seen absolutely flat failures. At one time his bees were starving with 160 acres of blooming sweet clover within easy reach. This was at Kenney, Ill., and occurred in a very dry year when nearly all vegetation was "burned up." Indications are, therefore, that extreme drouth or extreme moisture make for an extremely light yield.

100 COLONIES AND 100 ACRES.

Nearly all correspondents, before answering this question, stated emphatically that theirs could only be a guess as other factors entered into the crop. Here are some of the answers:

1. In irrigated districts 200 pounds per colony; in Alabama probably more than half of this.—Alabama.
2. 100 pounds to the colony, more if bees were stimulated.—Alabama.
3. 70 to 125 pounds to the colony.—Colorado.
4. 150 to 200 pounds to the colony.—Kentucky.
5. 100 pounds to the colony.—South Dakota.

Fig. 67—Eucalyptus Blossoms

6. 50 pounds to the colony would not be remarkable.—ILLINOIS.

7. I have produced better than 100 pounds average of comb.—ILLINOIS.

Frank Coverdale, of Iowa, the sweet clover man, has his 300 colonies of bees in one apiary. He harvested a carload of comb honey in 1915, most of which was from sweet clover. He has 170 acres of sweet clover on his own place.

Taken all in all these approximate and actual yields are encouraging. Even if we reduce the yield to that of the lowest guesser, 50 pounds would be no mean crop when added to what we already have, even if we had to do without it some years.

GENERAL CHARACTERISTICS OF VALUE.

In the Central West, the white clover crop ends the spring flow and there is a lull until the fall crop. This lull may be filled with sweet clover. As Miss Emma M. Wilson, of Marengo, Ill., writes: "There has never been a time when we have had to feed bees to keep them going through the season since sweet clover became important, although we may have had to feed in the spring or for winter. The advantage shows more in poor than in good seasons. It fills in the gap when other things fail."

Another thing mentioned by one or two correspondents is that if sweet clover is cut for hay before it blooms in spring, the second crop blooms later (not co-incident with white clover) and continues to bloom until frost. Atmospheric conditions seem to be a little better, also in the late summer, and the honey yield is noticeable.

CONCLUSION.

Proper growth of the plant and proper atmospheric conditions are the prime requisites for obtaining the best honey crops with sweet clover. Warm, sultry weather with plenty of moisture in the ground for the plants tends towards the heaviest yield.

Sweet clover will not prove as good a honey yielder for the Central West, as alfalfa is at present for the Rocky Mountain States, principally because we cannot control moisture. But when sweet clover is grown generally throughout any section of the country, that section may be assured of a distinct addition to the honey flora, with some good crops of this honey alone, while absolute failures, with bees starving, though not absolutely provided against, will be much more rare than formerly.

Hamilton, Ill.

No. 14.—The Honey-Producing Plants

BY FRANK C. PELLETT.

IN this number we turn aside from the consideration of plants of the northeastern States and will mention a few of those familiar to the beekeepers of the great southwest.

YUCCA.

Over vast areas of the arid West there is little for the bees. A few plants withstand the long continued periods of drouth even where there is no irrigation, and these add to the total production of the apiaries in the irrigated regions. Among the attractive plants may be mentioned the yucca, also called Spanish bayonet, Spanish dagger, Adam's needle, mountain queen and Roman candle. There are about a dozen species, mostly from Dakota west to the Pacific and southward. They are common in Mexico and Central America. They are also to be found in the sandy sections along the Atlantic coast from North Carolina to Florida and Louisiana.

When in bloom the plant is very ornamental. A single tall flower stalk contains many large, white or cream colored flowers. In many localities where the plant does not grow wild, it is grown for ornament as in Fig. 66, which shows Hon. Eugene Secor admiring a beautiful specimen that grows on his grounds.

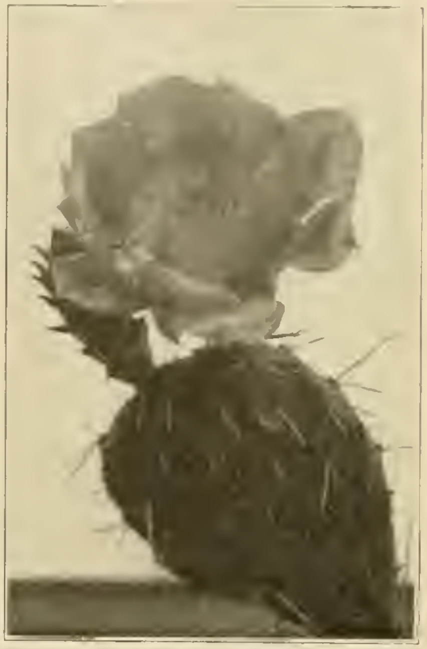

FIG. 69.—FLOWER OF PRICKLY PEAR

FIG. 68—THE PRICKLY PEAR AS AN ORNAMENTAL PLANT

In "Honey Plants of California," Richter lists *yucca whipplie* as an important source of nectar, which in localities where it is abundant yields surplus. In that State its blooming period is June and July.

EUCALYPTUS.

There are about 150 different species of eucalyptus trees, most of which are native to Australia and Tasmania, where they are the most characteristic and important timber trees. Many of them secrete resinous gums, hence are called "gum trees." A number of commercial products are derived from them. They have been widely introduced into California, and, to some extent, also into Florida, Texas and other southern States. The various species are known as sugar gum, blue gum, mahogany gum, red gum, stringy bark, white ironbark, red box tree, and various similar names. Richter lists 21 species as yielding honey in California. According to this author there is a great variation in the quality of honey from the different species. While some species seem to yield water-white honey of good quality, others produce an amber product of low value. The blue gum, *Eucalyptus globulus*, is said to produce "Honey amber, of acid flavor, heavy body and granulating within a few months. The blue gum is very constant in nectar secretion, even in spite of unfavorable weather, and since it is of wide distribution, considerable quantities of honey come from this source. On account of the pronounced flavor of eucalyptus honey there is little or no demand for it in retail trade."

On the other hand, he describes white ironbark, *Eucalyptus leucoxylon*, "a great honey producer, with a beautiful flavor much like vanilla extract."

Almost all of the honey seems to be gathered from the sources which produce the poorer grade so that the eucalyptus honey is not favorably known in the markets.

The blooming period of the different species varies so that some are in bloom at all times during the year. The blue gum, already mentioned, blooms from December until June, while the sugar gum blooms from August to November. Several species bloom during the winter months, when they are especially valuable in sustaining the bees until the time of the main honey-flows, Figure 67 shows the eucalyptus blossoms.

PRICKLY PEAR OR INDIAN FIG.

Plants of the cactus family are widely scattered in the arid regions from Dakota to Washington and south to Texas and California. Of the prickly pears *Opuntia*, there are about 150 species, mostly found in the warmer sections of North America and southward. A few are to be found in sandy soils farther east, ranging from Ontario and Massachusetts south to Florida. They are also sometimes grown as ornamentals, as shown in Fig. 68. The blossom of the prickly pear is of pale yellow color and very attractive, Fig. 69. It is reported as a source of nectar in both Texas and California. *Opuntia engelmanni* is reported by Scholl in "Honey Plants of Texas," as "of much importance to the beekeeper, especially during a season of partial drouth. Both an abundance of honey and pollen was obtained, the honey being light amber in color, of heavy body, but 'stringy,' so much so that it fairly draws out into strings when very thick. The flavor is very rank."

Atlantic, Iowa.

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The Use of Automobiles for Outapiary Work

BY WESLEY FOSTER

AUTOMOBILES are now almost universally used by Colorado beekeepers. Two or three years ago I mentioned, in one of the bee journals, that there were 20 autos in use by beekeepers in Colorado. Last June at the picnic of the Colorado Honey Producers' Association, held in Boulder, there were 17 autos that brought the beekeepers and their families, and none of these autos came more than 40 miles. There are now doubtless between 100 and 200 autos in use by the beekeepers in this State.

The successful use of automobiles by the beekeeper depends upon several things, roads, cost of gasoline, mechanical ability of owner, and driving ability of the driver. If you can run an auto for not to exceed 7 cents a mile, you can afford to use one in bee work. If it costs you 10 cents a mile you had better use a horse, and get a motorcycle to use when the roads are good. A horse, harness and wagon can be kept for $150 a year, more or less. But you can go three times as fast with an auto and can haul about as much load. With an auto of the right kind, the control of swarming is simplified for the beekeeper can get around almost any time.

With my own experience of five seasons with autos, and with my observation of other beekeepers' experiences, I have definite ideas on the type of car the beekeeper should buy if he considers economy and service as the most important requisites.

The beekeeper who runs from 100 to a 1000 colonies can do most of the hauling with a light car, like the Ford. By using a touring car, you can remove the rear seat cushions and pile in 30 to 35 cases of honey, either cased or in the supers. If you use the regular touring body in this way, carpet cushions to protect the paint and car parts from damage, when hauling these loads, are advisable. Do not get two bodies for your car, for if you do, it will be largely a waste of money, because in the busy season you will not find time to make the change from a utility to a pleasure car. The roadster style of car is better adapted to equip with a box, but the disadvantage of this is that you have only a two passenger car.

A well-to-do Boulder county farmer told me that any car weighing over 2700 or 2800 pounds was too hard on tires. He had a car that weighed 4500, and it cost him 25 cents a mile for every mile he ran it.

Mr. J. C. Mathews, of Montrose, uses a touring car with a trailer and is well satisfied with it, but he is now figuring on a slightly larger, heavier and better equipped car. Right here, I should say that it is maintained by a number of beekeepers that the cars, such as the Buick, Dodge, Studebaker, etc., are really cheaper to operate than the Ford. The claim is made that though tires cost more, the higher priced cars have more substantial construction. Mr. Edgar Polhemus, son of D. C. Polhemus, of Lamar, Colo., who has had thorough experience in handling cars, thinks that the Studebaker cars have cost less for the service obtained than the Fords. Mr. Polhemus and his son, who is his partner, drove one of their Studebakers 18 months with only $2.00 expense, exclusive of gasoline, oil and tires; these items of course being a fixed charge on the mileage made.

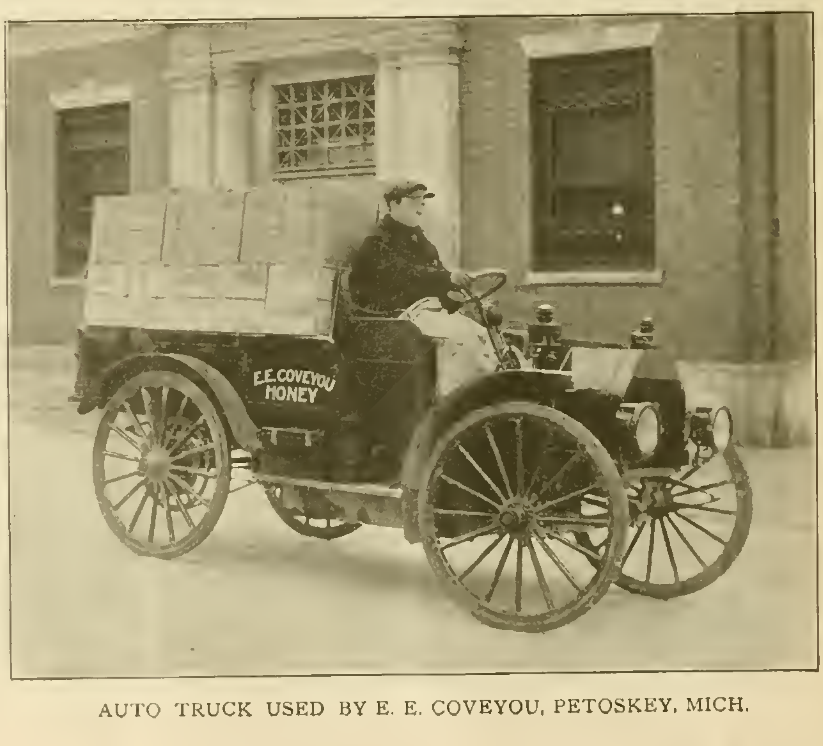
Mr. Polhemus and son have two Studebakers, or rather E. M. F. Studebakers, four-passenger models. The rear seat is removable and a box is put on for bee work. Trailers are used when the rush season comes and then each car is capable of hauling over a ton at a trip. It is far easier on a car to use a trailer and load the trailer than to overload the tires.

Beekeepers at times are tempted to overload tires, so that the use of oversize tires on the rear wheels is to be strongly recommended; it will save expense in the end.

The manufacturers of auto trucks have claimed it to be a mistake to build a truck body on a touring car chassis. This claim has not been borne out by tests where light cars are considered. The heavy trucks come under a different class and beekeepers should not be misled into thinking a big truck the thing. Get a small machine and go oftener.

If you are a beginner with an auto, I would suggest that you get a small car, either new or second hand. If you make any serious blunders they will not be so expensive if it is a second-hand machine to begin with, and parts may be replaced very reasonably. Your second car may be a larger, more expensive car. Don't get your experience with an expensive car, unless you are careful by nature or mechanically inclined.

There are a number of little conveniences that help make an auto more useful. First, the size of the body; make it 46 or 48 inches wide so that it will take two hives crosswise. Make the body long enough for a fair load, but do not have it extend more than 18 inches behind the rear wheels. Use a sheet of heavy iron or steel (one piece) for the bottom of the body;



AUTO TRUCK USED BY E. E. COVEYOU, PETOSKEY, MICH.

supers and hives slide over it so nicely, and any honey can be easily wiped up. Have a box on the running board for bee-hive tools, and do not get the auto tools and the bee-hive tools mixed up. Arrange the hives in each apiary so that the auto may be run down between the rows for unloading hives and supers and loading on honey.

I have found it very handy in hauling honey on an auto to smoke out what bees will leave the super quickly and put the supers right on the auto. When the auto is loaded the canvass cover is tied over until ready to start, then it is turned back and the bees come out pretty fast. The throb of the car and the motor drives the bees out, and being unable to keep up with the car they return to their hives. This works finely during the honey flow.

One caution right here, do not try to drive an auto and kill an angry bee at the same time, you may run into the ditch. In hauling bees, do not run more than 20 miles an hour, suppose you should lose a rear wheel. I broke a rear axle one time when I had on 26 colonies, and if the hives had not been well tied on, there would have been a bad spill, but not a hive got out of position, as the car was not going over 10 miles an hour when the break occurred.

My own experience with a car for apiary use began in May, 1913, when my brother and I purchased a 1909 Reo automobile, two cylinder, 20-horse power, with a removable tonneau. The cost was $275, and the expense of running the car in 1913 was about $300, counting $75 for depreciation. The car ran about 6000 miles that year, and many times hauled loads of 35 to 45 filled supers from 6 to 20 miles. Hauling such loads of course is hard on tires. In the season, my brother and I hauled over 1300 cases of honey, and did all of the apiary work for 700 colonies, with this car.

In 1914, we used the same car with an expense of a little less than $300 for the season's work, but we had more trouble with the car. The past season of 1915, we have used the same car and have run it more than any previous year, and the expense has been correspondingly more. One thing that has made the expense of running this car rather high is that we have had so many different people running it. If you can care for your own car, the expense will be very much less.

Quite a number of International trucks have been bought by Colorado beekeepers, but while they have given good service, most of the beekeepers say they think they will get some other machine. One of the reasons is that few beekeepers can go above $500 as first cost of an auto.

The most costly mistakes have been made by beemen buying second-hand cars, because they were cheap, buying cars because they were getting a lot for their money, and buying big cars so that great big loads could be hauled. When an auto has been bought, you can count that the expense has just begun. Gasoline and oil will cost as much as the average grocery bill amounts to each month, and when you have a machine it will be used more for pleasure than a horse and buggy is used.

A Ford car can be run for 2 to 5 cents a mile, according to the price of gasoline, oil, the size of loads hauled, the skill of the driver, etc. If you are a careful mechanic, 3½ cents a mile should cover cost of gasoline, oil, tires, actual expenses for repairs, parts, depreciation, etc. Our County Agriculturist ran a car one year at an expense of 4 cents a mile and paid his garage rent, and hired all repair work done. He figured very liberal depreciation, more than it has been necessary to allow, as second-hand Fords sell nearer the original cost than any other car.

The box for the beekeeper's auto is very important. If you use an open box, provide tie hooks on each side about 18 inches apart, so the loads can be tied securely. A good strong, pliable tie rope and heavy canvas will be necessary. If you use stake side-boards with a canvas, you will ordinarily need no ropes. The canopy top for the body is convenient, because by using side slits hooked or bolted to the uprights, the canvas or tying is seldom needed. A box 48 inches wide by 60 inches long will hold nearly, if not quite, 100 8-frame supers, or half as many hive bodies. Twenty-five colonies of bees may be moved at a time if they are not too heavy. A good, heavy, wide drop end gate is a great help to the beekeeper, and should be included in your specifications for a box.

The handiness of trailers cannot be gainsaid; they can be hooked on easily and autos have no trouble pulling them well loaded. They should be either equipped with solid rubber tires or pneumatic tires. Good springs will be required, as the trailer is generally pretty well loaded. The cost of trailers will be from $35 to $100 each, depending upon the kind of wheels used, and the looks you want in your trailer. If you use solid tires and do the work mostly yourself, you may get out on $35 expense. That is a pretty low figure, however.

Boulder, Colo.

[Our own experience with the use of automobiles coincides with the opinion given by Mr. Foster in the previous article. We have found that the light Ford is by far the best machine for short quick work, and is more economical to operate. Besides this, it is simple and can easily be driven by almost any one. In our apiary work, we frequently have to send some of our factory hands to do odd jobs, such a car is very convenient for this work.

For hauling honey and moving bees, we have so far used nothing but horses and wagons, as we keep two teams for our supply hauling and farm work. Of course, we produce extracted honey, and this can be moved at almost any time when the teams are not busy. For the beekeeper who runs even as few as two or three outyards, an automobile seems to us to be almost indispensable. —Editor.]

Selling My First Car of Honey

BY E. G. LE STOURGEON.

I WOULD not write this if both Mr. Pellett and Mr. Dadant had not urged me to do so. I do not like to appear boastful, nor am I given to using the first personal pronoun a great deal. I happened to be in the office of the American Bee Journal last month, and in conversation related how I came to be in the bee and honey business and how my first car of honey was sold. They made me promise to give it to the readers in the same way that I recounted it to them.

When it comes to marketing honey my idea is that fundamentally it cannot be different from marketing any other commodity. I mean that the same principles of salesmanship that would apply to any other marketing effort with success would also prove successful if applied to the sale of honey.

Five years ago I was a cereal salesman traveling for a St. Louis mill, with as little knowledge of the bee business as the average boy who was reared on a farm, where a few colonies were kept, and who later drifted to the city. In the parlance of the street, so far as actual beekeeping knowledge is concerned, I might say that "I hardly knew on which end of the bee the stinger was."

I was born in Texas and had been almost always a resident of San Antonio or its closely contiguous environs. Even though I was technically traveling out of St. Louis, I remembered and loved my old home to such an extent that everywhere I went I registered at the hotels as being from "San Antonio, Tex."

I soon began to notice that one question was most likely to be asked of me whenever my place of residence became known. In Elmira, N. Y., or Red Oak, Iowa; in Albert Lea, Minn., or Raleigh, N. C., some one would walk up to me and say: "You are from San Antonio? Do you know where I can get some of that delicious honey such as I saw at the World's Fair," or "that I ate while in San Antonio" or "that I have heard my aunt speak of?"

This happened with such frequency that I at last realized a field was left fallow which I could till. I had often wanted to give up traveling and settle down, and this was my opportunity to do so and still remain in my beloved Texas.

I started in business March, 1911. That year we had a wonderfully large and excellent crop of honey in early spring. The Sunny South apiary operated about 600 colonies of bees in Atascosa county, and early in the season had a car, 36,000 pounds, ready for shipment at Jourdanton station. It was loaded and sent forward by freight to Knoxville, Tenn.

At last I was going to put my ideas to the test, to prove that I could find a market for our honey; that honey would sell by the same methods that would sell other commodities; that there was a strong demand for honey if only an intelligent effort was made to find the demand.

When the car reached Knoxville, I arrived just after it. I did not know a soul in town. I had a letter to Mr. A. J. Harris, a commission merchant, and another to a lawyer whose name I have forgotten. I went to the depot on the day of my arrival and took from the car a few cans of bulk comb honey in 3 pound, 6 pound, 12 pound, and 60 pound sizes. The next morning, bright and early, I was in the market house with a large cut glass punch bowl (borrowed from the hotel) full of bright white slabs of comb honey for every passer-by to see. I did not know a single merchant's name nor what the local price of honey had been. I added 2 cents to the Texas price of the honey to pay my own profit and traveling and selling expenses, added the freight and a liberal profit for the grocer, and placed a price per pound and per gallon upon the honey that would cover them all. Whoever came by was invited to taste and examine the honey. Some wondered if it could be possibly "this year's honey, as our bees are hardly out of the cellar yet." Some wanted to buy, but I told them I could only take orders for delivery through their grocers. I took dozens of orders that morning and thus got a line on the grocers, their names, standing with the trade, etc.

I left the market house and called on Mr. Harris to act as my cicerone, and offered him a commission on my business there, to introduce me and handle the deliveries and collections for me. The first store we called on bought 25 cases of honey. Remember that "a case of honey" means in Texas 120 pounds, not a glass-front box of 12 to 24 sections. Before I had been in Knoxville 48 hours I wired for another car.

That night I left Knoxville and the next day worked Morristown, Greeneville and Asheville, N. C. At Asheville I sold one man 40 cases (120 pounds each). On a sight-seeing automobile trip to "Biltmore"—Vanderbilt's beautiful country home—we passed a small wayside country grocery, and on the way back I stopped and sold them five cases. These outside orders were to be shipped by Mr. Harris from the second Knoxville car upon its arrival.

This is the story of my first marketing experience and the way I sold my first carload of honey. It is notable that cars of Texas honey have been regularly sent to Knoxville ever since, and our delicious sweet is a popular seller every spring and summer in the better class of grocery stores of that entire district. What was done at Knoxville can be repeated anywhere. Honey is food and people want food. It must be prepared for market in a standard form with grading rules that all can understand and that harmonize with the desires of the trade. Whenever a merchant or a consumer orders honey from year to year he ought to feel assured that the packing, and manner of preparing for market, will be the same each time he orders it.

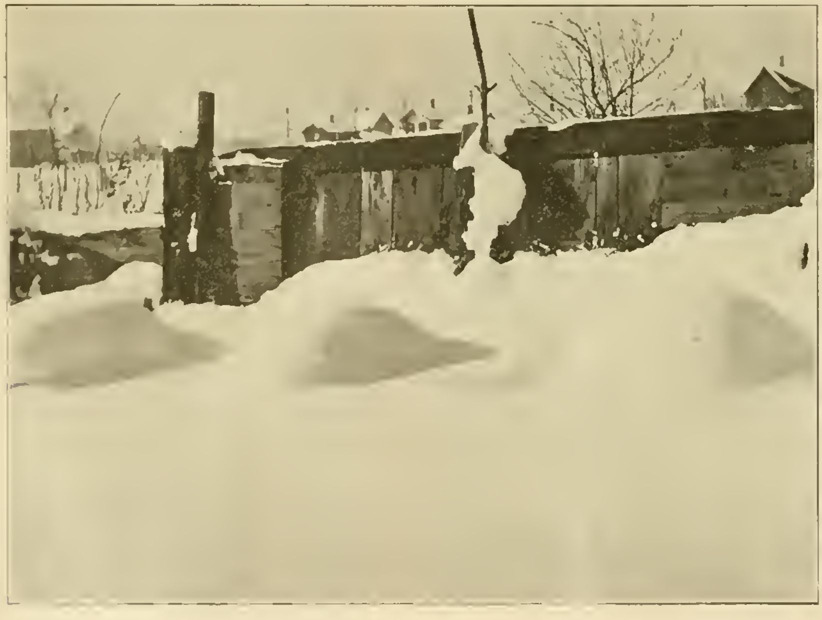
San Antonio, Tex.

The Importance of Keeping Entrances Free from Ice

BY LEWIS L. WINSHIP.

MUCH has been printed in various papers and magazines in the past about keeping the entrances to beehives unclogged with snow or ice. Along the first of January, 1915, a blizzard struck us, covering everything to a depth of from one to four feet. Not just one night, but four, did the snow whirl and blow striking into every nook and crevice that was exposed to the weather. The photograph shows to what a depth the hives were covered. This photograph taken the first bright day after the storm is not an old Indian burying ground as some might suppose, but the mounds are beehives covered deep with snow, so deep in fact that they are not discernable.

I hoped that the snow would stay light and fluffy, keeping the bees warm and comfortable. Nearly every bee paper gives snow, if light and fluffy, as an ideal protection against extreme cold. Is it any wonder then that I was filled with gratification when I gazed at the row of mounds and thought of the countless thousands of little workers, all waiting to be awakened by the gentle breath of spring? I knew that they had an abundance of stores, and as long as the snow remained light and fluffy my wintering conditions could not be more ideal than they were. But—



HIVES COVERED WITH SNOW

"All the plans of mice and men gang'aft aglee," as Burns, the poet, said in one of his poems. I use these words as they express my thoughts exactly and much better than any words of mine could.

The light fluffy snow lasted about a week, and at the end of that time we had a thaw with some rain, which soon turned to snow again, but not until a thick crust of ice had formed over the top of the snow effectually shutting out any air for the bees.

Cold weather followed this thaw but I did not remain inactive, and as soon as possible dug the entrances to my hives open, thereby giving the bees some fresh air and ventilation. Figure 2 shows a hive uncovered and the entrance clogged with solid ice. This is the shape all of my bees were in, having at least three feet of packed snow over them and from one to three inches of ice on that. It certainly was not a bright prospect to dig out the hives if a person had many bees, but having only 11 colonies they were all dug out in one forenoon. If these colonies had not been uncovered, no doubt the bees would all have smothered. Doubtless many amateur beekeepers have lost their bees in this manner and are yet ignorant of the fact. My bees, after being uncovered, had some fine flights, and they are certainly beneficial where outdoor wintering is practiced. Where the bees have no flights from early fall until late in the spring, they are almost certain to have dysentery, and this is one reason I would advise outdoor wintering, especially to the novice.

When the snow is light and fluffy the heat from the bees will melt a space in front of the hives, which serves as a breathing place through which fresh air works its way into the hives. But how can you expect the bees to melt a breathing place through solid ice? It behooves beekeepers in general to keep the ice from in front of the entrances to their beehives. If this is done they will have no trouble with bees smothering for lack of air.

Sprinfield, N. Y.

Queen Rearing

BY HENRY BRENNER.

AT the beginning of March we start queen-rearing for our own apiaries and for increase. The method we use is as follows: We make a frame or rim out of light wood four inches wide, closely fitting the outside dimensions of a brood-frame with the top-bar projections sawed off flush with the end-bars. About one inch down on the inside of this rim we tack a strip all the way around, for the frame to rest upon when lying flat. The usual top-bar wedges furnished with Hoffman frames or comb guides, are excellent for this purpose. We now have a box or frame, open at top and bottom, into which a brood-frame will exactly fit when lying flat upon its side, with the three-inch space beneath the lower surface of the comb.

We use two colonies in queen-rearing. One which we call the Rearing colony feeds the young larvæ. From the other we obtain the eggs. This latter colony we call the Breeder, and it is chosen for trueness to type, record of honey produced, color of bees, and excellence of queen. As a matter of fact, and a circumstance that is hard to explain, we have found the best Rearing colonies to be those that are more or less hybridized. They seem to be more prolific, make larger and more perfect queen-cells than bees of purer strain, and also rear cells in greater number.

We go to our Rearing colony, which has been strengthened in February by giving it sealed brood from other colonies. (You cannot have your Rearing colony too strong.) We take the queen out, some brood and bees, and make another colony. In the queenless colony, which is the important one, we leave one frame with unsealed brood and are very careful that it has several frames containing fresh pollen, even if we have to take pollen from other colonies in the apiary. We keep the frame of unsealed brood in the middle of the hive, frames of pollen on each side of this brood-frame, and fill up with frames full of honey.

The new colony or nucleus that has been made with the queen from the Rearing colony, is not given too much brood at once as some of the field bees return to the old stand and there is likely to be chilled brood during cold nights. The remainder of the brood, if too much to put with the queen, we divide among other colonies and give it back gradually to the queen, if desired. After making the Rearing colony queenless, our Breeding colony—that is the colony containing the queen from whose eggs we desire to rear our young queens—is given a nice empty, dry, clean, worker comb in the center of the brood-nest. At both sides of this comb should be frames containing unsealed larvæ and eggs. The next day we see whether the queen has occupied this new comb. Four days after finding the first eggs in the empty comb it is taken out and the ends of the top-bars sawed off so that the frame will fit into the already prepared rim or box described above.

With a blunt tool or flattened stick we scrape away the top rows of cells clean down to the midrib of this comb, for about an inch to an inch-and-a-half parallel with the top-bar of the frame. We leave one row of cells. We then rub off or scrape again all the cells down to the midrib of the next four rows of cells and again leave an undamaged row of cells. We repeat this until the bottom-bar is reached. There will then be several rows of cells, containing eggs, about an inch to an inch-and-a-half apart, running lengthwise of the comb with bare places or strips between, down to the bottom of the frame. Be very careful in rubbing out the cells not to injure or rub through the midrib because if you do the bees will gnaw into the other side of the comb. Now we go crosswise of these rows of cells and destroy again all except every fourth or fifth cell in the row. The surface of this comb, on one side, will then have the appearance of a checker board, with individual cells containing eggs, about an inch to an inch-and-a-half apart in every direction. If you look closely while preparing the frame in this way you will find that a great many of the eggs have just begun to hatch.

Before placing the frame thus prepared into your Rearing colony take the frame of unsealed brood away from them, so that for a few hours at least they will be in distress at being broodless. Place an empty super on the Rearing colony and put the rim containing the frames of eggs in the super with the prepared side hanging down over the brood-chamber. These cells will hang vertically over the top-bars about three inches above the top of the frames. Cover the colony well to conserve the warm of the cluster. We always put a cloth cover snugly over the frame box and another cloth packed down closely over the top of the uncovered frames so that the bees cannot go up excepting into the space containing the cells thus prepared.

These coverings prevent the bees from gnawing through the open spaces in the comb where the cells may have been scraped off too closely and also assist in keeping the brood-chamber warm for the work of the bees in extending the cells and rearing the young queens. The bees start right away to work and draw out dozens and dozens of the finest queen-cells imaginable.

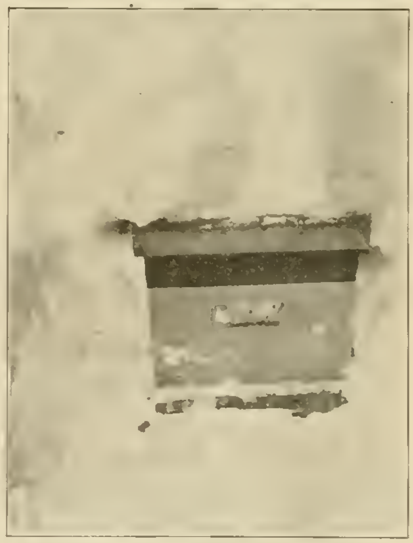
About ten days after we put the frame in our Rearing colony the cells can be disposed of as desired for requeening or increase. By this method the cells are all of the same age, perfectly ripe and clean so that you need no cell protector provided you can use the young queens immediately. Where we cannot use the cells at once we use the Rauchfuss cages and nursery frames such as are listed in supply catalogs. In every cage we put sugar and honey and a number of nurse bees.

At the time we take out the frame of brood which we originally left in the Rearing colony when it was made queenless, we examine the other combs carefully to see if there may not already be queen-cells started elsewhere in the hive. We had two cases in our yards where the bees transferred larvæ or eggs (which we do not know), and we lost in the first case our batch of cells because a young queen hatched four days before they were ready. The bees will also sometimes transfer larvæ or eggs from the prepared frame after we have put it into the Rearing colony, but we have never found any particular harm done in this case because the queens thus reared are of the same age as those hanging in our queen-rearing frame.

When we lift the queen-rearing frame out, the first day or two after it is put on the Rearing colony, we mark two of the more advanced cells. After ten days, one of these marked cells is cut open and we know exactly when the batch of young queens will commence to hatch. This is a practice which we always follow. We have had cases even at the 10th day (which could be but the 14th day from the laying of the egg), where the queen was ready to hatch and would crawl out fully developed. Should this happen, the virgin queen can be introduced into any colony without any precaution. Our experience is that, if we have cold weather, queens will hatch a little later, and sometimes in warm weather they will hatch a little earlier, than the time given in the bee books.

If you make a colony queenless for the purpose of requeening with a queen of their own rearing, do not ever use the cells which the bees start right away or the one which is first sealed. We destroy those cells no matter how nice they look. The reason is not far to seek. When the bees find themselves suddenly queenless they sometimes use larvæ already too old to make good queens. When a colony is made queenless and the bees determine to rear a queen they are naturally in a great hurry for it and may rear the queen from a larva that has been hatched for a day or two. It is obvious that this queen has not received royal jelly from the moment that the egg hatched and therefore will not make as good a queen as one that is given proper food from the instant it came out of the egg and when the bees have been preparing for it. For this reason our belief is that the first cells that are reared by the bees in the case of a queenless colony should be destroyed and only those permitted to hatch which were built over eggs that had not yet hatched at the time the bees found themselves queenless. These later cells are as good as any that can be reared if the queen-rearing conditions are all right in other respects.

We believe that our system of rearing queens as described above is the best and most natural method. All the young queens are reared from absolutely fresh eggs or very young larvæ, and there is no transferring necessary with the incident danger of breaking the eggs or of confusing the bees. By the use of our flat-lying frame, as described above, all the queen-cells hang in a vertical position and can be drawn out full length by the bees, which is not always possible when built in



Entrance Clogged with Ice

cramped positions on the sides of the comb and when the bees have built them under distress conditions without having had time to prepare for queen-rearing by manufacturing abundant supplies of royal jelly. The cells raised as we describe them above are always straight and will always fit into the nursery cages and introducing cells. By our method we rear as many queens as are necessary for an entire apiary, at one time and in one colony, which save an incalculable amount of time and labor when requeening.

As in all queen-rearing operations it is necessary that there be a constant flow of nectar supplied to the bees during the period of incubation, and if weather conditions are such that there is no nectar coming in and the bees cannot fly, it is well to practice constant stimulative feeding during the time the cells are in the Rearing colony.

Seguin, Tex.

[Mr. Brenner's method is a duplication, with additional and useful improvements, of the method used by Oscar Dines, described in the American Bee Journal for June, 1912, by Mr. F. Greiner. The horizontal comb method was original, as we believe, with Mr. H. L. Case, of New York State.

Our correspondent will permit us to offer a short criticism of his able article. It is regarding his belief that "the first cells that are reared by the bees in the case of a queenless colony should be destroyed and only those permitted to emerge which were built over eggs that had not yet hatched at the time the bees found themselves queenless". This is on the assumption that the so-called "royal jelly" is entirely different from the jelly fed to the worker-bee larvæ at any stage of their life. The observations of scientists overthrow this view. There is little if any doubt that the richest larval food is supplied to all larvæ during the first three days of their existence, it being changed to a coarser food in the case of drone and worker after that period while the rich food, under the name of royal jelly, is continued to the queen-larvæ to the end of their larval period. Were it otherwise, the tendency of bees to rear queens from larvæ two or three days old would have a nefarious influence on the entire race. Our own experience in queen-rearing has always proven favorable to the first hatched queens.—Editor.]

Automobiles for Beekeepers

BY J. L. BYER.

AUTOMOBILES have come to stay. That is the almost universal verdict even on the part of many who have no love (so they say) for the gas wagons. Possibly no body of men in proportion to the number engaged in the business are more fully represented as drivers of autos than are the beekeepers. As I pause in my writing for an instant, I can call to mind about 20 Ontario beekeepers who own machines, and no doubt there are at least as many more unknown to me. It can hardly be said that beekeepers are a more prosperous bunch of fellows than their neighbors engaged in other callings, so there must be other reasons. One of these is that their calling requires much travel, especially if they have outyards, and there are very few who depend upon bees for a living but what have outapiaries.

The question of expense of buying, and more particularly of up-keep of the machines, looms large before the prospective buyer, and those of us who are running machines are often asked, "Does it pay to own an auto for apiary work?" I want to say, in the words of our esteemed friend Dr. Miller, "I don't know," and yet after all it may be of interest for me to give a few figures as to what it has cost us to run a machine for the last three years. Please bear in mind that I consider the question from other angles than simply the dollar and cent view.

Although we run a car, we also keep a horse; that complicates the problem a bit. We live in the country, and during the winter months we would be shut in too much if we did not have a horse. Fortunately, during the three years that we have had a car, a neighbor has been keeping our horse in a way that costs us very little. He has no driving horse himself, and as we use a horse but little in the summer season, he feeds it and in return has the preference for driving during the time that there is no snow on the ground. During winter the farm horses are idle and then we have the preference if we need the horse. The plan works well, but I am aware that a combination affecting two people's interests so favorably cannot often be expected.

In the season of 1913 we bought a Studebaker car—a five passenger 25 H. P. model. This car was run until September of the present year, and then, having a chance for a deal, it was traded for a 7-passenger 1916 model of the same make. The old car was turned in at two-thirds of its original value, and it is on that basis that I figure the cost of the transaction. Repairs were very light. After hearing what some have to put up with, I feel like saying nothing about this item at all. On the basis of my deal, depreciation cost me about $130 a year. As the last season was an average one, I will give figures for that year alone as to oil, gasoline and tire costs. During the season we have run just about 5000 miles—ran the car for the last time this season on Christmas night—snow fell the next day. I have averaged nearly 20 miles to the gallon, imperial measure of course, which is about one-fifth larger capacity than the United States measure, which we call "wine measure."

That figures 250 gallons of gasoline at an average price of about 18 cents—it is much higher now. I used about 15 gallons of Cylinder oil at 70 cents a gallon. My tire bill was light, as in the 5000 miles I had only two punctures and one blow out; $40 would cover this item nicely. Will place repair bill at $10, which will cover all items in that line. Recapitulating we have for the year with 5000 miles running: Depreciation, $130; gasoline, $45; oil, $10.50; repairs, $10; tire bill, $40; making a total of $235.50. I have not mentioned the matter of lighting, which must be put down to about $4.00 for two tanks of "Presto-lite." My tire estimate may be a bit low, as we never know how long old tires will last, so to be on the safe side we will raise the bill to $250. The new car is electrically lighted and started so these figures may be too low for next year's expenses, but there is no use borrowing trouble.

For 5000 miles running, then the cost figures out 5 cents a mile. But I made a splendid deal in getting rid of the used car at the price obtained for it—it was in good shape and hardly scratched, but old cars are hard to sell at a fair figure. But the important

EXTRACTING DAY AT THE MONASTERY APIARY OF FRANCISCAN FATHERS
OLDENBURG, IND.

APIARY OF E. E. STERNER, WRIGHTSVILLE, PA

saving of expense was that I had such good luck in tires. Users of cars, especially of medium weight, will bear me out when I say that the tire bill might be double what mine was for the season just passed, particularly so when we have so much crushed stone on our roads, not limestone, but genuine hard cobble stones run through the crusher.

Now $250 is a big bill for driving during one season, when I can keep a horse for a little over $100. *But* how many miles would we have driven with the horse if we had had no auto? Much time was made in going back and forth, sometimes three yards were called at on one day. Yet in the end I honestly do not believe that from a dollar and cent standpoint the auto paid us. But when I think of the many pleasant trips the family have had, trips that would never have been possible without the car, I am tempted to say that it paid us very well. From the youngest member of the family to the oldest, who happens to be the writer, we would be very sorry indeed to have to get along without the auto after using one for three years.

Before getting a car I asked friend Sibbald's opinion as to the paying proposition of an auto, and he answered something like this, "Don't ever think of the expense of the car, for it is worth all it costs." Only on that basis can I truthfully say that it pays us to run a car. Some may have a different story to tell and may make the car pay its way and even more, but this is my answer to the many who have asked me, "Does it pay you to run a car in apiary work?"

Markham, Ont.

A Venture into Southern Beekeeping

BY J. F. ARCHDEKIN.

THERE were several things which influenced us in deciding to move South and take up beekeeping as an exclusive pursuit. In the first place, I am a farmer by trade and a beekeeper by occupation. I love the farm and cannot give up the idea that some day I will farm again. Bee work was taken up as a side line at first, but has since become the main one. From a boy I have been interested in bees, and used to visit a neighbor who had them and talk to him and look at his colonies. Finally he sold out and moved away, but before leaving he presented me with a colony of black bees.

This was about 18 years ago. My joy was complete, and since then I have always had a greater or less number of colonies. At first the plan was to practice migratory beekeeping, but this was abandoned after investigating the proposition. It can be worked nicely, as there is plenty of time after the close of the tupelo here to move to the white clover regions of the Central States. But at present I am content to remain stationary.

Last year was a failure in my locality (St. Joseph, Mo.), the bees getting no surplus worth mentioning and requiring to be fed for winter. The prospects were fine for another year, but they had been just as good the fall before and had come to nothing. Foulbrood is raging in that part of the State and it got into one of my yards in the fall and nearly wiped it out.

The bee business was therefore in a bad way, and it was either quit or move. In addition to this I had an attack of rheumatism in August, and was under a doctor's care for over three months. There was a chronic case of appendicitis to consider, too. I was in hopes of securing a better bee location and benefitting my health at the same time that the move was undertaken. In the former it was a complete success as this is one of the best bee localities imaginable. As to the latter it was a failure as will be seen later.

Three locations were considered. One in Florida, one in Alabama, and one in Louisiana. After considerable correspondence the Louisiana location was deemed the best, and a trip was made to look it over. When I got on the train at St. Joseph it was snowing and the temperature below zero. This was the week before Christmas. The storm extended well down into the South, and there was ice and snow nearly to Shreveport. It was raining there, and while quite chilly it was a decided change from the snow and cold I had just left.

As I had to lay over several hours here, I got out between showers and secured a good idea of the town. Shreveport is a hustling place of 30,000 inhabitants or over, and it was indeed cheering to me to see palms and other green trees in midwinter. Alexandria is another good town. Indeed, I like these two places better than any southern city I have seen, not even excepting New Orleans. There is a hustle and go to them that shows they are awake.

My destination was reached that night at about 1:00 o'clock, and I got off the train at a flag station called Sarto, on the L. R. & N. railroad. The mud was deep, and it was about the gloomiest night I ever saw. Stopping at the first house I came to, to borrow a lantern and get my bearings, I proceeded to hunt up my man, Mr. J. B. Marshall.

We are located on Red river, about 50 miles below Alexandria in Avoyelles Parish, just where the Red river empties into the Mississippi. This particular section is enclosed in a loop or bend of the Bayou de Glace, and is about 30 miles in circumference. It is swampy. This Bayou is a very crooked stream. A very striking peculiarity about the topography of this land is that the banks of the Bayou are higher on each side than the surrounding land, so that the drainage is away from it instead of toward it as would naturally be expected. The land slopes back on either side to the swamps and is cleared of timber, and is or has been under cultivation. The open land varies in width from 150 yards to a mile, and miles and miles of it are abandoned.

This country is badly run down, and in a most dilapidated condition. First, the civil war broke these people, and a few years ago the boll weevil came and finished up what was left, for cotton is the principal crop. The trouble is that they stick to one crop too much. There should be more diversified crops planted and other industries taken up.

Beekeeping is one thing that has been neglected but is now in course of development here, and is destined to become one of the most important lines in the near future. There is room for thousands of colonies in this one bend alone, and there are numerous localities just like it. In fact, I feel that the production of honey here will some day rival the cotton crop in value. This sounds like a big statement, but every conceivable condition needed by the honeybee is here. Mild winters so that a pint of bees and a queen will winter if supplied with honey and a continuous flow from the opening in the spring to Nov. 1, combined with the even temperature make it ideal in every respect.

When we finally made up our minds to go South, there were a lot of details to be arranged, and some of them were really hard propositions. It is a big undertaking to move from one State to another, especially as far as we went did. Two hundred colonies of bees were purchased in the new locality. We had

80 colonies in two yards, but foulbrood had appeared in one of them too late in the fall to do anything with it. There is absolutely no disease in this State, so it was decidedly risky to take these bees along. Every one advised us against it. But we couldn't sell them in that condition, and there was no one to leave them in charge of so we brought them along. First, however, we melted up all the diseased ones. This left us 55 in all which we considered healthy. All these colonies were given the McEvoy treatment in the spring as soon as they had built up sufficiently so as to be certain that any infection that had escaped our notice should be given no chance to develop.

We have not been able to detect any evidence of disease in them so far. This may seem to be an over-cautious procedure, but coming as we did from an infected area we wanted to be sure that no disease was transmitted. No doubt foulbrood will in time spread over the South, but at present it is free from this trouble. Anyway, we rest lots better since we are sure of these bees.

During the latter part of January, 1915, these bees were prepared for shipment. They had been left out on the summer stands with no protection. and many were in a weakened condition. The weather being intensely cold and the ground covered with snow, they were brought into the cellar so that we would be in a more comfortable place to work. Even at that we suffered severely. First the entrances were screened then the covers removed and wire-cloth tacked over the tops of the hives. The bottoms were left on and securely fastened by crate staples. The covers were left off during the trip. An ordinary box-car was secured and the bees and fixtures loaded into one end and our household goods into the other while a Ford occupied the middle portion. I will never forget the day we started to load the bees. Part were hauled on a sled and part on a wagon, but no combs were broken. Indeed, only one or two combs in the entire lot were broken during the 800-mile trip.

The method of loading them into the car was as follows: A layer of hives was placed on the floor as closely together as possible so as not to allow any motion sidewise or back and forth. The frames were parallel with the rails. A 2x4 was nailed on the floor in front of the layer to prevent it slipping forward. Three pieces of 2x4 were next laid edgewise on top of the hives one at each side of the car and one in the middle. Pieces of 1x6 board were then nailed on top crosswise of the car at the proper distance apart, so that the front and rear ends of the hives would rest on them. Another layer of hives was set on them and then another set of 2x4's until all were in. The pile of hives was now braced securely from the front so that it could not move and the remainder of the car filled with our other goods. These bees went through in fine shape, only two colonies arriving dead, and these were very weak when they started. They were confined in the car eleven days. From the time the car was shipped until it arrived in Louisiana I did not see it, so the bees had no attention on their long trip.

We had intended to use a horse for our transportation in Louisiana, getting about from one yard to another and hauling material. After mature consideration it was given up and a runabout purchased and loaded into the car with the bees and other things. It turned out to be a lucky investment, for a horse could never have stood the work, and besides the horse would have cost more to feed than the up keep on the car amounts to. In common with lots of other people, I was always inclined to poke fun at the small cars, but I have had my eyes opened by the service this car has given us, and I am about as enthusiastic over it as any one you will find. The turtle back was taken off the rear and a box put on in place of it transforming it into a light truck. It will carry 1000 pounds, and is the finest thing imaginable for outyard work. The car is easy to understand, there being comparatively little intricate mechanism in it. I am 50 miles from a repair shop, and am therefore my own repair man by necessity, but so far have been able to do anything required. Of course, I should mention that I had automobile experience before we came here.

Bordelonville, La.

[To be continued].

MISCELLANEOUS NEWS ITEMS

Death of Michigan and Wisconsin Beekeepers.—Readers will be shocked to learn of the sudden death of Mr. H. C. Ahlers, of West Bend, Wis., which occurred but recently from hemorrhage. At about the same time occurred the death Mr. W. E. Forbes at Plainwell, Mich. Mr. Forbes was a civil war veteran and a beekeeper of 40 years' experience, having kept as high as 200 colonies of bees.

H. C. Ahlers has practiced *North and South* beekeeping with much success in the last few years, having apiaries in Wisconsin and in Louisiana.

Our sympathy is extended to the families of these two successful men, in their bereavement.

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A Good Insect Book.—We have received from the pubishers, Ginn & Co., of Boston, Mass., a copy of "Elementary Entomology," by E. Dwight Sanderson, of the West Virginia College of Agriculture and C. F. Jackerson, Professor of Entomology, New Hampshire College. The book is bound in attractive cloth cover, contains 372 pages, and is unusually well illustrated. There are more than 400 pictures to assist the student in identification of the various insects described. The price is $2.00.

The work is designed as a text book for short courses in Entomology, and is written in a style quite intelligible and interesting for the average person. The whole field of insect life is covered, including bees. While there is nothing in relation to practical beeculture there is an interesting account of the relatives of the honeybee, bumblebees and other wild bees. There is a chapter on the anatomy of insects, which can be read with profit by any beekeeper. Full directions are given for collecting and preserving insects.

This book may well fill a place in the library of any student of insect life.

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Report of Michigan's 50th Meeting.—With an attendance of almost 200, the Michigan Beekeepers' Association held their 50th annual convention at Grand Rapids on Dec. 15 and 16 last.

It does not fall to the lot of every beekeepers' association to enjoy a 50th anniversary, and the consensus of opinion of those present was that Michigan had a worthy celebration, and one that has left pleasant memories.

The meeting was marked by several interesting and novel features, one of these was the banquet supper, so kindly provided for by the G. B. Lewis Co., of Watertown, Wis., and the A. G. Woodman Co., of Grand Rapids, Mich. Another feature was the giving of medals. The cut gives a good idea of what these medals are like.

In place of the usual half dozen entries there were over 40 different exhibits, and in the comb honey and light extracted honey classes competition was very keen. The medals are cell shaped, 1½ inches in diameter, and bear on one side the portrait of L. L. Langstroth, suggested by Dr. Phillips.

The medals were provided as follows: The manufacturers of supplies, Messrs. G. B. Lewis Co., A. I. Root Co., Dadant & Sons, R. & E. C. Porter, The Marshfield Mfg. Co., The Kretchmer Mfg. Co., and Gus Dittmer Co. gave the gold medal. This medal is 10 karat solid gold, and is known as the manufacturers' medal; value $50.

The Michigan jobbers in bee-supplies: Messrs. A. G. Woodman Co., M. H. Hunt & Co., W. D. Soper, and The Beekeepers' Review per E. D. Townsend, provided the silver medal. This medal is known as the jobbers' medal; value $20.

The bronze medal is provided by the association, and is known as the association medal.

The medals were much appreciated and declared appropriate and beautiful in design, and created much interest during the meeting. Many of the beemen present decided that the winners would have to put up the finest of exhibits next year or the medals would change hands.

While there were over 40 entries at this convention, we are preparing for many more exhibits at the next meeting, in Lansing. The object in providing the medals will no doubt be attained; that is, an exhibit worthy the name and the State of Michigan, and one that the public will come to see.

For our next meeting we hope to combine more features that will make this side of the convention a big drawing card to the general public.

Among our many visitors were some prominent beemen from other parts, including Dr. E. F. Phillips, Prof. Jager, John C. Bull, George Williams, R. F. Holtermann, F. Danzenbaker, Dr. Kohn, etc. The interest in the meetings was well sustained throughout, and the attendance at the closing session was equal to that of the earlier sessions.

MICHIGAN AFFILIATED BEEKEEPERS ASSOCIATION
L. L. LANGSTROTH

Michigan Medal

President Running, in his address, alluded to the value of the summer apiary demonstrations, and touched upon the possibility of some of the Smith Lever funds being used for apiary demonstration work.

The program was full of valuable and instructive papers, which contained some excellent suggestions and ideas, as follows:

"Running Outyards for Extracted Honey"—Mr. E. D. Townsend.

"Notes from the Year's Work"—Mr. Morley Pettit.

"Size of the Brood-Chamber"—Mr. C. P. Dadant.

"Phases of Queen-Breeding"—Prof. J. H. Haughey.

"Beekeeping in Minnesota"—Prof. Francis Jager.

"Transferring Bees"—Mr. A. H. Guernsey.

Question Box—Mr. R. F. Holtermann.

"Some Lessons of the Last Half Century"—Dr. E. F. Phillips.

"Beekeeping as a Prison Industry and its Reformative Influence"—Mr. O. H. L. Wernicke.

"Business Principles and System a Big Asset in the Success of the Apiarist"—Ira D Bartlett.

"Outdoor Wintering"—Dr. E. F. Phillips.

"The Bee Business in Canada as Seen by a Trip Through Different Provinces"—Mr. Morley Pettit.

The winners of the challenge medals were Mr. and Mrs. Floyd Markham, Ypsilanti, manufacturers' gold medal.

Mr. E. E. Coveyou, Petoskey, jobbers' silver medal.

Mr. David Running, Fillon, association bronze medal. Medals have to be won three times before they become the property of the exhibitor.

Lansing was chosen as the place for the next meeting. Messrs. A. I. Root Co. and M. H. Hunt & Son announced that they would be hosts to the beekeepers present at that time, when they would serve a banquet supper. Those present at the banquet at Grand Rapids will remember what a pleasant time was spent, and visions of another good time at the Lansing meeting are already arising and will no doubt materialize at that time. F. Eric Millen,
East Lansing, Mich. *Sec.-Treas.*

Western New York Meeting.—The annual meeting of the Western New York Honey Producers' Association was held at the American Hotel at Akron, N. Y., Dec. 14, 1915, and was very well attended considering the weather conditions. Many more would have attended had there not been so much snow.

After reports of the secretary, treasurer and delegates to State Association were read and accepted, a suggestive constitution was read and adopted. As the weather for two years has been bad on the day of our meeting, it was decided to hold it in November instead of December, as heretofore. Several of the speakers were unable to be present on account of the weather and other reasons.

We had Mr. J. Roy Lincoln, of Niagara Falls, with us, who told of his method of making increase, which condensed is as follows: When bees are strong enough to swarm naturally, place all the brood except one frame and queen above the supers above an excluder. When cells are started this top story or nucleus is set off on a new stand, provided the stock was satisfactory for rearing queens from. If not, a desirable cell or queen may be given to this nucleus or nuclei as the case may be. Now, after the honey crop is taken off 24 hours exchange places with the nucleus and the parent hive, which is generally overflowing with bees at this time. The flying bees, or the old bees, seem to get added vigor by having a young queen in the hive, and they seem to work harder and wear themselves out getting the nucleus stocked with brood. This means young bees for winter which we must have in order to get a fair measure of success, thus both colonies are in the pink of condition for young bees with plenty of stores. It is rather important in exchanging that the bees are not excited, as that might cause trouble in uniting.

Several members seemed to think that sweet clover has a great promise in store for those who take advantage of the opportunity it gives.

The secretary told of the different ways of disposing of the honey crop; namely, jobber, wholesaler, retail grocer, and direct to the consumer. He said that he thought the greatest good for all concerned was direct to the consumer. In many cases this is impossible. Mr. D. C. Hubbard, of Wyoming, told of his views of marketing, etc. Several other questions were brought out and discussed, after which the meeting adjourned. All reported having a fine time. Wm. F. Vollmer, *Sec.*

The National Convention.—The National will meet at Chicago on Feb. 22, 23 and 24, as announced in our January issue. A preliminary program will be found on page 24 of that issue. The Sherman Hotel will be headquarters.

Washington Meeting.—Our association will hold its 22d annual convention on Feb. 9, 10, 15 in the Farmers' Room in the Court House in North Yakima, Wash. We are looking forward to a good time. We are anticipating a large attendance even if we are one month later than usual, owing to unavoidable circumstances.
J. B. Ramage, *Pres.*

New Jersey Meeting.—A meeting of the New Jersey Beekeepers' Association will be held in the Entomology Building, Bleeker Place, New Brunswick, on Feb. 10 and 11, 1916. Mr. Geo. Demuth, of the Bureau of Entomology at Washington, D. C., will address the meeting. Others will discuss various phases of the business. Don't fail to hear the man who wrote Farmers' Bulletin No. 503. E. G. Carr, *Sec.-Treas.*

Bees as Pollinators Again.—We cannot too much emphasize the utility of bees to fruit growers, so our readers will be glad of another authority quoted on this subject.

In the "Southern Fruit Grower" for November, J. G. Moore, writes of the "desirability of cross-pollination of the strawberry," and among other statements makes the following, which is worthy of repetition:

PRESENTED BY
MANUFACTURERS

Back View of Michigan Medal

"It is commonly believed by growers that when perfect varieties are grown, it is not necessary to provide for cross-fertilization. This is true, but investigation has shown that in most cases cross-fertilization gives better results than self-fertilization even with perfect varieties. For this reason it would seem wise even when planting a perfect strawberry to use more than one variety.

"What proportion of the pollenizing variety should be used? Opinions differ as to the proper answer to this question. Doubtless much depends upon conditions. If the season is favorable for pollination, or if bees are kept in the immediate vicinity, a smaller proportion of the pollenizer would be necessary than if climatic conditions at flowering time were unfavorable or pollen carriers scarce."

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Quebec Beekeepers.—The Beekeepers' Association of the Province of Quebec met Nov. 11–13, 1915, in Montreal. About 150 members were present as well as a number of ladies and Sisters of Charity. The meeting was presided by Hon. Dr. Lalonde.

Addresses were made by Dr. Pilon, a Provincial delegate; Hon. J. E. Caron, Minister of Agriculture of the Province; J. C. Magnan, official agronomist of the Province; J. E. Prud'homme; Dr. O. A. Comiré, former secretary; Jacques Verret, president of the local Quebec Beekeepers' Association; J. I. Beaulieu, Entomologist at the Experiment Farm of Ottawa, and A. E. Barbeau, of Montreal.

The Minister of Agriculture announced an increase of $100, in the allowance given by the Provincial Government to the association, and promised to authorize the giving of lectures by the several bee-inspectors of the Province during the winter.

The President of the Bank of Hochelaga, E. A. Vaillancourt, offered a prize of $10, to the association.

A large exhibit was made and 25 premiums amounting to $49.50 were distributed to the exhibitors.

The officers of the previous year were re-elected as follows: Emory Lalonde, President; A. L. Beaudin, vice-president; Oscar Comiré, secretary-treasurer.

The lectures and addresses read at the meeting will be published in pamphlet form, in the French language, and may be secured by addressing the secretary, Oscar Comiré, Abenakis Springs, Quebec.

◆

The Noise of Bells.—In the Bohemian Bee Journal we find very interesting observations, to help the oft discussed question of the effect of noise upon bees. Jung-Klaus owns an apiary near a cemetery and a church. If about noon there is a flight of young bees, the noonday ringing of the church bell diminishes or completely stops this joyful manifestation. If a swarm is beginning to rush out, the effect is the same, the bees return and remain until the next day. The first flight, in early spring, is subject to the same result, when the bell tolls for a funeral or rings for noon. In another magazine, the same notice was given of the effect of bell ringing; when a comb of bees is examined they suddenly become still as if an electric current had struck them.

These observations explain in a certain measure the custom followed, in the days of yore, to make noises when a swarm issued. They also say that it was to announce the fact to the neighborhood to prevent any one from attempting to take possession or claim the swarm, but the latter explanation seems less plausible than the former, which is based upon the effect produced upon the bees by the sonorous vibrations which shake the air.

We wonder whether any remarks have been made, on our frontiers, upon the effect produced by the explosions of artillery?—Schumacher in the Bulletin D'Apiculture.

◆

Stings Curing Inebriety (?)—It has long been known that bee-stings are of great value in the treatment of rheumatism. The poison which a bee injects into your body when it stings you not only relieves the rheumatic pains and swellings, but makes a person more or less immune to further trouble from the disease.

This result is due, it is believed, to the formic acid which is found in large quantities in the bee's venom. Formic acid, as has been shown by experiments with hundreds of cases, is the best of antidotes for the poisons in the system which stiffen the joints and muscles with rheumatism.

Now it has been discovered that bee-stings are as effective a cure for inebriety as for rheumatism. This important discovery was made quite by accident in a London hospital.

Five men were being treated for chronic rheumatism. Four of them had been hard drinkers for years, and one of them was a confirmed drunkard.

Bee-stings were applied to them, and the rheumatic condition promptly subsided. When they were finally discharged they found that the treatment had done more than cure rheumatism—it had destroyed their taste for alcohol. Even the sight of a drink nauseated them, and since leaving the hospital several months ago, not one has touched liquor.

The hospital physicians, who were as greatly astonished at this unexpected result as their patients, have set on foot a widespread investigation into the effects of bee-stings on drunkards, to see whether they are an infallible cure for inebriety.

Facts already brought to light show that an intoxicated person is quickly sobered by a bee's sting, and that drinking men who take up work among bees, where they are frequently stung, soon lose their old craving for alcohol.—"Freeman's Journal."

—*Australasian Beekeeper.*

◆

How does the bee dispose of her honey? She cells it.—*British Bee Journal.*

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Honey as Food

A good deal has been said and written about the value of honey as food, but the probability is that very few rate it at its true value either among beekeepers or physicians. Dr. Ehrhardt, a physician in Germany, has written a pamphlet on the subject, from which quotations are given in the German bee journal, "Die Bienenpflege." Although nothing original may be given, the importance of the subject warrants an extract here.

Dr. Ehrhardt says: "Honey, as is well known, contains 79 percent of sugar, 42 percent being grape sugar, 35 percent fruit sugar, and only 2 percent cane sugar. That is very little cane sugar. For it is only the grape and fruit sugar that, without any change, can be received directly into the blood from the stomach and intestines. So they spare to our bodies the work, while cane sugar, the kind of sugar in common use, before it can be taken into the blood, must first be inverted, changed. All our food-stuffs must undergo various and numerous chemical changes in the digestive organs; grape and fruit sugar alone undergo no such changes.

"When this sugar is taken into the blood, it either goes into immediate use or it is laid up for future use, as glycogen, in the muscles and liver. Glycogen is in reality sugar, from which the water has been separated. The sugar now serves in our bodies as the source of power; the muscles are fed upon it; they consume it when they perform labor. So we work in reality with sugar. If we become tired, sugar immediately gives us fresh strength. This has been proven hundreds of times through trials with soldiers and sportsmen. Soldiers again became immediately fit for service or the march after partaking of sugar.

"If honey deserves the preference over ordinary sugar on account of its high content of grape and fruit sugar, still more does it deserve the preference on another account. Honey contains not only sugar, but in addition important salts of lime, compounds of iron, various other ash constituents, and formic acid. Precisely for the growing organism, for the child, are the salts of lime and the compounds of iron of the greatest importance. On the same ground are ripe fruits so valuable for nourishment; for the aforementioned materials are unqualifiedly requisite for the upbuilding of the tissues; lacking them there arises sickness, anemia, etc."

If all the people believed this and acted upon it, where could enough honey be obtained to supply the demand? But how many know it? How many even among beekeepers? How many women beekeepers and beekeepers' wives really believe that honey is much more wholesome as an article of diet than sugar? How many women use honey instead of sugar in cookery? How many women beekeepers insist that honey shall be used in hot drinks in place of sugar? How many children in beekeepers' homes are brought up on a diet of bread and milk with honey?

It is not by any means claimed that a moderate amount of sugar is injurious, but that beyond a certain amount the preparation of sugar for proper assimilation throws too heavy a burden upon the digestive organs. The average consumption annually in this country is more than 80 pounds for every man, woman and child. Physicians are generally agreed that that is too high an average. If the average is too high, what must be said of those who eat much more than the average? But while the Doctor warns against the evil of too much sugar eating, he does not sufficiently emphasize the fact such evil may be overcome without any self-denial, simply by taking the sugar in a form ready for immediate assimilation as found in ripe fruits and honey.

A bee journal is not the best place in the world to preach to the general public the gospel of health, but it is a good place to ask what beekeepers themselves are doing. Sister beekeeper, how about *your* home?

Transferring Bees

1. I caught a fine swarm last May in a half barrel with two cross sections, but as I had never had bees before I did not know how to remove them to a hive, nor how to get out the honey. Please tell me through the Bee Journal how to move them to a hive and when.

2. Will they winter without protection in Mississippi?

3. At what time of the year is the honey removed?

4. How many hives and supers need I buy in the spring to be prepared for swarms?

[Mrs.] Jerome S. Withrow.
Grenada, Miss.

1. You can transfer into a proper hive in fruit bloom, but nowadays it is considered better to leave the bees in the old hive until they swarm. Then hive the swarm in the new hive, setting it on the old stand, with the old hive close beside it. A week later move the old hive to a new stand perhaps 10 feet away. Then two weeks later still, or three weeks after hiving the swarm, drum the bees out of the old hive, leaving them on the same stand in a new hive. If you wish, you can cut some of the best worker-comb out of the old hive and fasten it in the frames of the new hive. Possibly you may find some of the comb containing honey fit for table use. The balance of the combs you can melt up for wax.

2. As far south as latitude 34 degrees the winters are quite warm, and your bees will probably need no protection; but it will be no harm to pile against the hives something to break the force of the chief winds, and also to keep them a little warm on top.

3. You can take the honey any time you find it sealed in the surplus apartments, removing all when the honey flow is over.

4. If you proceed as directed you will need two new hives. The fact that the swarm last summer was very strong will probably make no difference now. Like enough provision for 100 pounds of honey in supers will be enough.

Be sure to let us know how you get along, and don't be afraid to ask too many questions.

◆

Double-Walled Hives

I have just been reading of Dr. Miller's success in producing honey in sections, and I am wondering if you have any printed matter on the subject which I could buy. Would you tell me if bees can be wintered successfully in double-walled hives without further protection? I am located 20 miles north of Detroit.

I have 14 colonies in the Root double-walled hive. Should I give them more protection? Michigan.

Dr. Miller has written a book of 320 pages, called "Fifty Years Among the Bees," which gives in full detail just how he manages his bees throughout the year, and especially his management for securing crops of section honey. It can be obtained for one dollar from the American Bee Journal, Hamilton, Ill.

Double-walled hives are supposed to need no additional protection for wintering, and yet in some places they may be the better for it. There is no small difference between a hive surrounded on all sides by trees and buildings and one fully exposed to the continuous sweep of the winds. In the latter case additional protection would help, if it should be nothing more than cornstalks piled about the hive.

There may also be some question whether it might not be a gain for you to adopt cellar wintering. You are a little farther north than 42 degrees, and most beekeepers so far north as that find it better to winter their bees in cellars. Still there are those even farther north who winter outdoors successfully. If you have wintered so far successfully outdoors, it is a good plan to let well enough alone; but if your wintering has not been satisfactory, it might be well worth while to try at least part of your bees in cellar.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
Dr. C. C. Miller, Marengo, Ill.
He does not answer bee-keeping questions by mail.

What are Brood-Combs Worth?

What do you estimate the value of a Hoffman brood-comb after the foundation is drawn out? For example, if I purchased 100 Hoffman frames at $3.25, used light brood foundation in full sheets wired in with four wires. The foundation costs me 58 cents a pound. The frames were given to the bees and were drawn out. After I extracted the honey from them, they were totally destroyed by fire. How much was my loss per frame? New York.

Answer.—My guess would be about 25 cents each, which guess is subject to revision by Editor Dadant.

[Would say 20 cents each.—C. P. Dadant.]

Beekeeping Secrets

I send you an old American Bee Journal, dated March 1, 1906, in which, on page 185, a Mr. C. Davenport speaks of a great secret method of entirely preventing swarming, in a very easy way. Did he ever let out that great secret? Perhaps if he had put his scheme in book form, he might today be eating peaches and cream every day. I have heard nothing about it since. I would like to hear whether the secret ever leaked out. Indiana.

Answers.—C. Davenport was the *nom de plume* of C. Davenport Monett, of Chatfield, Minn. So far as I know he never gave his secret to the public, but I have an impression that enough was learned about it to make it doubtful that there was anything very new or valuable about it. He died in 1908, being burnt up in his own house, where he lived alone,

[Mr. Davenport was a popular bee writer who all at once announced in the American Bee Journal that he had made so great a discovery about the prevention of swarming that he did not deem it advisable to publish it. It was rumored that this wonderful discovery consisted in destroying the brood, after the colony became populous. It would indeed prevent swarming, but where is the beekeeper who would use such a method?—C. P. Dadant.]

Queen Leaving Hive in December

I have a good colony of bees. On Dec 18 the queen came from the hive. I found her about 14 inches from the entrance, almost chilled and unable to move, but not dead. I am afraid to put her back in the hive as she could not get to the cluster. What would you do in this case? Oklahoma.

Answer.—I'd feed her and give her a good warming up, pound on the hive so as to stir up the bees, run her in at the entrance and let her take her chances. Pretty certainly there's something wrong with the queen that would leave the hive Dec. 18—possibly a played-out queen with a younger queen in the hive—and nothing you can do will save her anyhow.

Size of Entrance for Winter

What size of entrance would you recommend in 8-frame hives for outdoor wintering in this section? Iowa.

Answer.—An entrance equivalent to

square inches will not be far out of the way. That would mean an entrance 2 inches wide if an inch deep; 4 inches wide if ½-inch deep; 5 inches wide if ⅜ deep; and so on. A very strong colony might have the entrance a little larger, and a weak one smaller.

Basswoods—Is Sumac Honey Poisonous?

1. Do you think that basswoods would grow in a soil that is very gravelly?
2. Can they be grown in a forest?
3. Is the wood good for fuel?
4. How long does it take to mature?
5. Is there a variety of sumac that produces poison honey?
6. Do you think that it would pay to have outapiaries of from 10 to 15 colonies?
7. What plant produces the most honey in your locality? SUBSCRIBER

ANSWERS.—1. Yes, it will grow in any soil where almost any other tree will grow, all though there is such a thing as having too much gravel.

2. Yes.

3. Yes, but rather soft, so that it is not a very lasting fuel.

4. I don't know just when you would call a basswood tree mature. It keeps on growing and increasing in size for 50 years or more. Perhaps you mean when is it large enough to begin yielding nectar. I'm not sure about that; perhaps when about 10 years old.

5. I think not. That impression may have arisen from the fact that one of the sumacs poisons the skin of some people if it is handled so that the juice of it gets upon the skin. It is *Rhus metopium*, coral sumac, poison ivy. But the honey from its flowers is excellent, and has nothing poisonous about it.

6. It might in some cases.

7. White clover.

Beehives Sweating in Winter

I have three colonies of bees, and have them in a good work box. They seem to sweat. Water runs out of the gum and I don't see any cause for it. If you can tell me anything that will stop the water from gathering on the gum I would be pleased. IOWA.

ANSWER.—It's what you might call the breath of the bees. They exhale vapor, and then it settles as water on the sides of the hive and runs out at the entrance. No harm is likely to come from it unless it be that it settles at the top of the hive and drops down on the bees. That is not likely to happen if there's good packing on top.

Sour Honey—Wintering Bees

1 I sold honey to a neighbor in July. He put it in a dry cellar. I visited him Dec. 26, and there are several pounds of it sour, not fit to use. Can it be used for vinegar or anything? What do you think caused it to sour? I have sold to at least 50 different ones, and have had nothing but praise from all the rest. At the time I sold this honey, we had lots of rain and the early apples bursted on the trees and the bees worked on them. Could that be the cause?

2. I have packed my bees in sheds, three in each shed, open in front from the super down, and have put 8 inches of straw all around and on top except in front. I have some very strong colonies with scant supplies, I think on account of the late warm fall and brood-rearing. They have left from 6 to 10 pounds of honey in the supers with a cloth over the supers. Do you think they will winter all right?

3 I have bees in several old box-hives I want to transfer next spring into new hives. Could I kill the old queen and introduce an Italian without any danger of the bees killing her? IOWA.

ANSWERS.—1. Honey is deliquescent; that is, it attracts moisture from the atmosphere when kept in a damp place. In your State cellars are likely to be damp, and you can hardly do worse than to put honey in them. That was probably the whole reason for the souring of the honey. Put dry salt in a cellar, or in any other place, and if it gets damp you may count that honey will not keep well there.

2. They may winter all right, but there is some danger that if there should be continued cold for a long time, they might starve without being able to reach the honey in the supers. The probability, however, is that you left the honey in the supers from early fall, and that the bees did their part in carrying it down before severe cold.

3. Yes, you can introduce a queen at that time, but you will have to use the same precautions as at any other time. See instruction for introducing in your bee-book.

Oilcloths and Straw Mats—Sugar Syrup, Etc.

1. Mr. Langstroth recommends using a straw mat directly over the brood-frames, and Dr. Miller recommends the use of the enamel cloth. In either case what becomes of the "bee-space over the brood-frames" claimed to be so important by most bee-men?

2. In feeding sugar syrup in warm weather I find that there is a sour odor to the syrup after a day or two. Is this harmful? What causes it?

3. Which is the better, guess at the quantity of stores in the hive in spring or remove the winter packing to be certain, and thereby chill the young brood? It would be a big job to remove and replace the winter coverings.

4. How do you put comb foundation in sections and extracting frames without the use of hot wax? This does not refer to brood foundation fastening in the grooves with thin strips of wood. NEW YORK.

ANSWERS.—1. Years ago I used enameled cloth, but for a good many years I have not used or recommended anything between top-bars and hive-cover. When anything in the way of cloth or quilt is used, then in winter something must be laid on the top bars to preserve a passage for the bees to pass over the tops from one comb to another. In warm weather there is no need of it.

2. I don't know what the sour smell should come from unless it be from actual souring of the syrup. That should hardly occur in a day or two unless the syrup be very thin. A little sourness will do no harm in hot weather, but lots of harm if it continues in winter.

3. Guess how much is needed, and then feed twice that much. Better still, be sure in the fall that they have enough to last until time for unpacking.

4. Can't. At least the foundation must be so warm and soft that you can fasten it to the wood by pressure, as with a Parker machine or putty-knife. Probably most use the hot-plate fasteners, which melts the edges of the foundation although some pour hot wax along the joint.

Bees Clustering in Second Story—Deserting the Queen

I winter my bees in two-story hives, and I notice that about half a dozen of them have clustered in the upper story. There is plenty of honey below, but it seems to be just a very little moldy. The honey above does not show any mold.

Four of those that went above had on queen-excluders, and at least three of them have lost their queens. I have heard it said that bees would not desert their queen, but they did. Why did the bees go above? Do they often desert their queen? How early next spring can I rear queens? WESTFIELD.

ANSWER.—I don't know why the bees should go through an excluder into the upper story, leaving the queen with plenty of honey in the lower story, unless there was something seriously objectionable in the honey in the lower story, and I have doubts whether the honey was bad enough for that. Possibly if I could examine the hives I might tell something about it, but I don't believe I could.

Under ordinary circumstances bees will stay by their queen, but in some cases they may desert her. Once I put a queen in a lower story and put all the brood in an upper story, an excluder between. It was early in the season and the weather turned quite cold. There was no brood in the lower story with the queen, and the cold weather made the bees go up into the story with the brood, leaving the queen to perish below.

Generally in your locality you will not be able to rear good queens until clover blooms, although sometimes you may succeed in dandelion or fruit bloom.

Retaining Aroma of Honey

1. In going over the colonies of an apiary during the different seasons (spring, honey flow and fall), methods of going through a colony to determine its condition, to perfect it, and to record same are used. What is *your* method, or any good method or system of recording, during each season, whereby my assistant or myself can know the exact condition of each colony, record same and refer to it. A summary of your system of each season's management of both comb and extracted honey

How do you build up weak colonies in the spring?

2. How may I retain the aroma of extracted honey? MINNESOTA.

ANSWERS.—1. To answer fully these questions would be going beyond the bounds of this department, occupying many pages. But you will find it all fully given in my book "Fifty Years Among the Bees."

2. The chief thing is to have the honey well ripened and sealed by the bees before extracting, and then to close it up as soon as possible so that none of the aroma will be dissipated. You see it isn't doing anything to retain the aroma so much as it is doing nothing to lose it. One of the quickest ways to lose the aroma is to heat it.

The "Trick" in Comb-Honey Production

In Gleanings In Bee Culture, last issue, your praises were sung as a comb-honey producer, and I wonder whether you could do anything advisatory to put me also in line for such praiseworthiness. I use 4x5x1⅜ sections and could not very well change. I feel greatly annoyed at the great number of light sections. Of 1150 for which I got full pay, I doubt that 150 would have *toed up* to "fancy," and if I depended upon anything but the home market I would have to "shut up" shop.

From my own point of view exclusively, I do not see how comb honey ever could pay under the established classification rules, as only 10 percent would be welcome to New Yorkers and commission men. I suspect that the princes of comb-honey production have a trick up their sleeves that they won't give away PENNSYLVANIA.

ANSWER.—I've pondered no little upon your letter, and the more I ponder the more I don't seem to get anywhere. Is there by any possibility some trick of the trade that I haven't fully divulged? I've written a whole book, "Fifty Years Among the Bees," a book that I think you have, trying to tell just what I do throughout the year, and especially with minuteness what I do to get crops of first-class section honey; in this department of question and answer, I've turned my heart inside out for all and sun dry, keeping back nothing; and now you come asking, "What's the trick?" I don't know. I wish I did.

You mention that you use sections 4x5x1⅜. I really don't know whether that should make any difference. But after trying a number of different kinds of sections, I don't think anything is better than the one most beekeepers have settled down upon, the two bee-way 4¼x1⅞.

If I were to make a guess upon any one thing in which beekeepers are likely to be at fault in getting sections well finished, it would be in not having colonies strong enough. The two watchwords I would bequeath to young beekeepers are; first, "Breed from the best;" second, "Make and *keep* colonies strong."

Wintering—Queenlessness - Swarming, Etc.

1. Is it wise to winter bees in a single board shed and double board hive packed in dry leaves three inches all around, but nothing in front only cloth to keep the bees from the light.
2. Is Nov. 15 the right time to pack bees? Then put them out when the first pussy-willow bloom?
3. Should I take the old honey out of the hive when the trees are full in blossom? An old beekeeper told me that it gets like sugar and the bees don't eat it, and those frames are of no use in the hive, when the honey is like sugar.
4. Is there any way of getting a bunch of bees out of a hollow tree 20 feet high?
5. Can you put a brood-frame with a queen-cell from a different colony into a queenless colony?
6. Isn't it good to use old combs for feeding, and how long should I feed the bees in the spring?
7. Which is the best honey extractor to use for 20 to 30 colonies?
8. Should I make my single hive into double-walled, and are hemlock or basswood boards satisfactory on the outside?
9. Should I cover the hives in spring so that the bees cannot go out when it is cold and windy?
10. Can you tell me if bees do well by a river? Some say too many get drowned.
11. How long can you keep brood-combs in the hive before putting in new foundation?
12. How many times should a colony swarm so they can gather lots of honey besides? WISCONSIN.

ANSWERS.—1. They may winter well, but it may not be best to keep the entrance darkened if there comes a good day for the bees to fly?

2. Packing in November is all right, but it may not be best to unpack when willows bloom if much cold weather comes afterward.

3. Generally the honey will keep all right, and the less you meddle the better. Even if some of the honey is candied it will do no great harm; the worst being that some of it will be wasted. At any rate, in more than 50 years I've never had to take out any of the old honey in spring.

4. No way so easy as to chop down the tree.

5. Sure; they'll accept a queen-cell from another colony just the same as if it was their own.

6. Yes; feed as long as needed; although it is perhaps better to feed all at once as much as the bees will use until the new crop comes.

7. A two-frame extractor will do if you never expect to increase.

8. Some like hives with double walls, but most prefer them single. Better use some other wood not so much given to warping and splitting.

9. When the first warm day comes in spring, it is better the bees should have a cleansing flight. After that, if it continues cold, it is just as well they should be confined to their hives, even if it should not come warm again for three or four weeks.

10. There is not very much danger. Just as many may be drowned in some wet place miles away from a river.

11. Opinions differ. Some think combs should be allowed to become more than three or four years old; some think they never get to be too old. I have never renewed a comb, no matter how old, so long as it was straight worker-comb in good condition.

12. That depends. If you are anxious for increase it may swarm three or four times. If you want best success and some honey, once swarming is enough. After a few years you will probably prefer to have no swarms —if you can help it.

Deaths of Herman F. Moore and R. A. Elliston

We are sorry to report two deaths among the noted beekeepers of Illinois.

Herman F. Moore died in an Evanston hospital of cancer of the stomach, Dec. 21, 1915. Mr. Moore, although a beekeeper on a small scale, was well known to the fraternity in Illinois, since he was for a number of years the efficient and active secretary of the Chicago-Northwestern Beekeepers' Association. He did much to popularize the use of honey in Chicago, and had among his customers some of the wealthiest residents of that metropolis. He was in the employ of Mr. Geo. W. York, in the handling of bee supplies at one time, and was esteemed by all who knew him.

Robert A. Elliston was born in Kentucky July 2, 1849, died Dec. 29, 1915. He was an extensive beekeeper and a great sportsman. He killed his first deer in Indiana when a boy. Later, he killed as many as 85 deer in a single season. At Bureau, Ill., where he died, he was engaged in the manufacture of decoys. He was a very successful beekeeper and kept as many as 245 colonies and produced up to 12 tons of honey a year. Mr. Elliston's death was very sudden, was very sudden, was caused by a rupture of the left coronary artery of the heart.

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GOLDEN all-over Queens. Untested, $1.00. Tested, $3.00. Breeders, $5.00 and $10.
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WILL TRADE fine, young Italian queens for first-class brood-combs, wired, in Hoffman frames. C. S. Engle, Beeville, Texas.

ITALIAN QUEENS that produce hustlers. Nuclei and pound packages.
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FOR SALE—100 colonies of bees in 8-frame Langstroth hives. Located at Dancy, Ala.
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BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

FOR SALE—Bright Italian queens at 75 cts. each; $7.50 per dozen or $60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

THOSE WISHING to buy queens next season will find it to their advantage to write me for price list or watch ad in this paper.
I. N. Bankston, Box 135, Buffalo, Tex.

FOR SALE—Bright Italian queens this season, 75c each; $8.00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

FOR SALE—Three-banded Italian queens. Nuclei a specialty. My stock will please you, as it has others. Let me book your order for spring delivery. Write for circular and price list. J. L. Leath, Corinth, Miss.

UNTESTED QUEENS of my business bees, $1.00 each—great honey getters, gentle. Ready March 1st. Disease unknown here. Write me and I will tell you how to make money buying my queens. Fully guaranteed
M. F. Perry, Bradentown, Fla.

FOR SALE—Three-banded Italian queens. Nuclei a specialty. Bees by the pound. My stock will please you as it has others. Let me book your order for spring delivery. Write for circular and price list.
J. L. Leath, Corinth, Mass.

FOR SALE—Italian bees and queens from a one-frame nucleus to a carload. Spring of 1916 is a good time to pick up a carload here. No disease known. References; R. F. Holtermann or any bank in Liberty.
J. F. Diemer, Liberty, Mo.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00: Breeders, $5.00 and $10.00.
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QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons, Boyd, Ky.

AN established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

GOLDEN and 3-banded Italian and Carniolan queens, ready to ship after April 1st. Tested, $1.00; 3 to 6, 95c each; 6 to 12 or more, 90c each. Untested, 75c each; 3 to 6, 70c each; 6 or more, 65c. Bees, per lb., $1.50; Nuclei, per frame, $1.50. C. B. Bankston,
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Queens from my honey-gathering stock 3 and 5 band Italians. Bred in separate yards. Queens the rest of the season—one, 75c; six, $4.00; 12, $7 00; 25, $13, Safe arrival and satisfaction guarannteed
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3 Wilcox St., Binghamton, N. Y.

Good Italian Queens, prompt service, by a new advertiser, but an old queen breeder. Queens mailed to purchaser in a new style introducing cage that is safe, simple and sure. Write for price list on queens nuclei or full colonies. Queens and nuclei ready June 1. J. F. Diemer, Liberty, Mo.

Queens—Early Queens, Golden or Leather-Colored Italians, one select untested, $1.00; 6, $4 25; 12, $8.00. Tested, $1.25. Best breeder, $5.00. Early Swarms of Young Bees in light screen cage a specialty. One 1-lb. package, $1 25; one 2-lb., $2.25, queen extra. For ten or more write for price; also nuclei and full colonies. Orders booked now for bees and queens, both ready for delivery March 15 and after. Safe arrival, prompt service and satisfaction guaranteed. Circular free. J. E. Wing,
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Largest Apiaries in the southwest for sale in lots to suit purchaser up to 1300 colonies. Nine good locations. Up-to-date equipment. Located in heart of large alfalfa region of southern New Mexico. Assured of perpetual water supply climate. Bees winter well out-of-doors. No spring dwindling. Three miles from State Agricultural College and town of 5000. Owners have other interests and can't devote time to bees, so will sacrifice them for quick sale. Correspondence solicited.
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Bees and Queens—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey gatherers. We breed this stock only. Untested queens 75c each; $8.00 per dozen; $60 per hundred. Tested queens, $1.25 each; $12 per dozen; $85 per hundred. Three frame nuclei, $2 25 each; $200 per hundred. Bees ½-lb. pkgs., 75c each; $60 per hundred; 1 lb. pkgs., $1 00 each, $85 per hundred. Add price of queens to above pkgs. Complete catalog free on application. Spencer Apiaries Co.,
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For Sale—Light extracted honey, clover and basswood blend, in any style packages. Write for prices. Sample, 10 cents, which may apply on order. M. C. Silsbee,
R. F. D. 3, Cohocton, N. Y.

For Sale—Extra good light amber mesquite and alfalfa honey. Two 60-pound cans to case, 5c a pound; 5 and 10 pound friction-top pails, 8c per pound per hundred weight. Cash with order on board of cars here.
B. A. Hadsell, Buckeye, Ariz,

For Sale—Car honey, half extra fine comb, half extracted, alfalfa, or car extracted. Small lots at $8 00 per case of two 5 gal. cans; case of six, 10 lb. pails, $5.00; 12, 5 lb. pails, $5.40. All f. o. b. here.
E. F. Atwater Co., Meridian, Idaho.

For Sale—Amber extracted honey well ripened, 6c per pound. For baking or bee food we can furnish honey-dew honey at 5c by case or 4½c in ten case lots, and 4c per pound in lots of 25 cases, all above is two 60-pound cans to case, H. G. Quirin,
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For Sale—10,000 pounds amber honey in 60-lb. cans or friction-top pails. Best quality; prices right; sample.
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For Sale—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

HONEY LABELS

Honey Labels—Liberty Labels will tempt the buyer to purchase your honey. Neat, attractive labels at right prices. Samples free. Liberty Pub. Co.,
Sta. D, Box 4H, Cleveland, Ohio.

SITUATIONS.

Wanted (by young man) a position for 1916 in an apiary Have five years' experience with a small apiary. Completed a course in apiculture. Age 19 years.
Chas B. Saunders, Merom, Ind.

Wanted—A position in a large apiary run for comb or extracted honey, or as an assistant in queen-rearing apiary. Best of references of long experience in bee culture. Ready at any time—a call may come.
Gen. Del. S. B. Barden, Philadelphia, Pa.

Wanted—A young man to work on fruit farm and in apiaries all of 1916, Must have a clean moral character, use no liquor or tobacco, and be an industrious intelligent worker, able to do well what he undertakes. Board and washing and good wages will be paid to the man who can fill the bill, and a chance to learn the business from one who has had 40 years' experience, and has made good. Emil J. Baxter, Nauvoo, Ill.

FOR SALE

California farms for sale. Terms, write
E. R. Waite, Shawnee, Okla.

For Sale—12 inch Root foundation mill in first-class order. Exchange for wax, honey or $12. J. I. Stringham, 105 Park Place, N. Y.

For Sale—Friction-top pails, 5-lb. size, per 100, $4.50; 500, $21.25; 10-lb. size per 100, $6.25; 500, $30. Low prices on other sizes in bulk. Also furnished in re-shipping cases. Shipped from Chicago.
A. G. Woodman Co., Grand Rapids, Mich.

For Sale—A bargain in bees, my apiary, consisting of over 200 colonies of bees, necessary fixtures, supplies, etc. Purchaser, if so desire, can find good location for bees here. Will sell very cheap. For further information, write or see
Ivory A. Shane, Sabinal, Uvalde Co., Tex.

For Sale—173 acres in Musselshell Co., Mont., 80 acres river bottom, house, barn, ice house, hen house, honey house, garage, hog house, and tool house. All new frame buildings, fenced, 50 acres in alfalfa. $5000, $4000 cash, balance on time. Apiary of 50 colonies, and all equipment for conducting an up-to-date apiary. Will sell apiary at your own price, if taken with farm. One mile from town and R. R. depot. Address,
Meadow Glen Apiary, Carpenter Creek, Mont

SUPPLIES.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

Comb Foundation—You can have your beeswax made into best quality foundation. Also the wax from old combs or "slumgum." We get it all out. On shares or very cheap for cash; new factory; old liberal terms; cheapest and handiest transportation for all northern beekeepers. You always get your ownwax back. J. J. Angus,
434 Fulton St., Grand Haven, Mich.

Do You want the best foundation fastener? Then buy "The Pangburn," mfg. by W. S. Pangburn, Center Junction, Iowa.

Good second hand 60-pound cans, 25c per case of two cans f. o b. Cincinnati; terms cash. C. H. W. Weber & Co., Cincinnati, O

Beekeepers' Supplies sold at a reduction. New prices now ready, Send for list free.
W. D. Soper, Jackson, Mich.

Five 8-fr. hives, $5.85; 10-fr., $6.50. Hoffman frames, $2.75 per 100. A full line at $1.25; one 2-lb, $2 25, queen extra. For ten or more, write for price. Also nuclei and full wholesale prices, shipped direct from factory in Iowa. Make out list of what you need and let us quote you special prices.
The Stover Apiaries, Mayhew, Miss.

MISCELLANEOUS

Hounds—Bear, wolf, deer, cat, fox, rabbit and bloodhounds. 50 page illustrated catalog 5c stamp. Rockwood Kennels, Lexington, Ky.

A Little ad in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

If You desire to exchange your surplus, strong, healthy, striped, mixed, black or yellow bellied colonies for a few greenback dollars within 600 miles South or West, state hives, condition and price.
W. A. Small, Waltham, Mass.

For Sale—Use cuts in advertising your queens, honey or bees. We are prepared to furnish cuts for use in beekeepers' advertising at low rates. Let us quote prices on what you need. American Bee Journal,
Hamilton, Ill.

Free for Six Months—My Special offer to introduce my magazine, "Investing for Profit." It is worth $10 a copy to any one who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how any one, no matter how poor, CAN acquire riches. Investing for Profit is the only progressive financial journal published. It shows how $100 grows to $2200. Write NOW and I'll send it six months free. H. L. Barber, 546-20 W. Jackson Blvd., Chicago, Ill.

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If You breed fancy poultry, offer your surplus stock or eggs for sale in our classified columns.

3470 Cockerels.—Forty-one varieties of chickens, geese and ducks. Address,
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Poultry Paper, 44-124 page periodical, up to date, tells all you want to know about care and management of poultry, for pleasure or profit; four months for 10 cents.
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BEE SUPPLIES

of all kinds; low prices. Discount for early orders. Catalog free.

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Denver, Colorado

American Bee Journal

Sweet Clover Seed

QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs	100 lbs.	Per bu 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2 00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22 50	$13 50	13.0c	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

HONEY AND BEESWAX

CHICAGO. Jan. 17.—There are very few sales of honey being made at this time, and under these conditions it is difficult to quote prices. The weather at this writing is about zero, and comb honey will not bear shipment without being injured more or less.

R. A. BURNETT & CO.

LOS ANGELES, Jan. 14.—We beg to report a very closely cleaned up market on all grades. Demand has been fairly active with a steady advance in prices. We quote strictly first-class A No. 1 extracted honey, in straight carload lots, as follows: Water-white alfalfa, 6c; light amber alfalfa, 4¾c; water-white sage, 7c; white sage, 6½c; light amber sage, 5½c; Hawaiian white, 5c; Hawaiian honeydew, 3½c. $1 00 freight to eastern common shipping points. Terms: Net cash, payable on arrival and examination.

HAMILTON & MENDERSON.

KANSAS CITY MO., Jan. 17.—The supply of both comb and extracted honey is large and the demand very light—especially on extracted. We quote as follows: No, 1 white comb honey, 24 section cases, at $3.10 to $3.25. Some sales of No. 1 comb have been made at $3.00, No. 2 white comb honey, 24 section cases, at $2.75 to $3.00; No. 1 amber, $3.00; No. 2, $2.50 to $2.75. Extracted white honey, per pound, at 7½@8c; amber (light), 6½@7c; amber (dark), 5½6c. No. 1 beeswax, per pound, at 28c; No. 2, 25c.

C. C. CLEMONS PRODUCE COMPANY.

CINCINNATI, Jan, 17.—Very little honey selling at present. We quote No. 1 comb at $3.75 to $4 00; No. 2 at $3.50 to $3 75. White clover extracted in cans, 7@9c; amber in barrels, 5½@7c, according to quantity and quality. For choice bright yellow beeswax we are paying 28c a pound delivered.

THE FRED W. MUTH CO.

NEW YORK, Jan. 22.—The market is very inactive both on comb and extracted honey, and large buyers are few and far between. Prices are ruling about the same as in our last report.

HILDRETH & SEGELKEN.

DENVER, Jan. 22.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: Fancy white, per case of 24 sections, $3.15; No. 1, per case, $2.93; No. 2, per case, $2.70. White extracted, per pound, 8½@8¾c; light amber, 8@8¼c; amber, 7@8c. We pay 25c per pound in cash and 27c per pound in trade for clean yellow beeswax delivered to us here at Denver.

THE COLO. HONEY-PRODUCERS' ASS'N.
Frank Rauchfuss, *Mgr.*

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

Langstroth on the Hive and Honey Bee.—A reprint of Langstroth's original book printed in 1853. Of course, this older book is out of date, but it is valuable historically, and should be in every beekeeper's library in connection with the modern revised work. Postpaid, $1.00. Clubbed with the revised book, price of both, $1.85. Both books and Am. Bee Journal one year, $2.50.

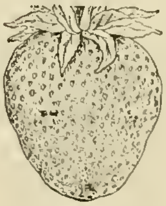
SUPPLY YOUR
Honey
Customers

With fine Alfalfa, Clover or Amber Fall Honey

We can supply you in packages to suit your trade. Any Quantity.

Also a limited amount of nice comb honey for sale. *Write us now.*

DADANT & SONS
Hamilton, Ill.



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165 Egg Incubator & Brooder
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Why pay more? A bigger, better, simpler machine at no increase in price. A proven cold weather hatcher. Built on U. S. Gov't. specifications. Write today sure for Free Catalog, or order direct from this ad and save time. You take no risk. Satisfaction guaranteed or money refunded. Comes set up ready to run, with egg tester and book of instructions. Don't delay. Get the facts at once.

NATIONAL INCUBATOR CO.
Box 38, Racine, Wis.

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We conduct a Bee and Queen rearing business in Florida during the winter, and at Canton, Ohio, during the summer. We now have a carload of selected Italian Bees in Florida for the purpose of supplying you with BEES and QUEENS for SPRING DELIVERY. WE GUARANTEE PURE MATING AND SATISFACTION IN EVERY RESPECT OR MONEY REFUNDED. We are breeding from Queens that gave a surplus of 300 pounds per colony in a 24-day honey flow. Will it not pay you to have this strain of bees in your yard? Prices as follows:

Island Bred Italian Queens. Shipments begin March 1st.

	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00

Tested Breeding Queens, $5.00 and $10 each.

Prices on Bees by the pound f. o. b. shipping point.
Shipment begins May 10.

	1	6	12
½ lb.	$1.50	$ 7.50	$12.00
1 lb.	2.00	10.50	18.00
2 lbs.	3.00	15.00	27.50
3 lbs.	4.00	21.00	36.00
5 lbs.	5.50	27.50	50.00

(These prices are without Queens.)

Prices of Nuclei and Full Colonies without Queens. Shipping now.
1 Frame Nucleus, $2.00; 2 Frame Nuclei, $3 00; 3 Frame Nuclei, $4.00; 5 Frame Nuclei, $5.00; 8 frame Colony, $8.50; 10 Frame Colony, $10'

Address all communications to

THE J. E. MARCHANT BEE & HONEY COMPANY, - Canton, Ohio

MY QUEENS GIVE SATISFACTION

MARKHAM, ONT., Oct. 15, 1915.

MR. H. D. MURRY, Mathis, Texas.

Dear Mr. Murry:—As I have used quite a number of your queens during the last three seasons, I thought you might be interested to know how they have turned out. They have given universally good satisfaction, and in only three or four cases in this time have any of the queens shown to be defective. In each case, such queens were promptly replaced. While the queens have given satisfaction, that is only one factor that pleases me in my dealing during all the time I have had business connections with you, promptness in answering letters, and other factors that go to make even the ordinary routine of business a pleasure has always been in evidence. While I feel that I can confidently recommend your queens as being satisfactory in every way, I certainly can also assure your prospective customers that they can be sure of a "square deal" every time they do business with you.

Sincerely yours, J. L. BYER.

Mr. Byer was for two years President of the Ontario Beekeepers' Association, and is a regular contributor to the columns of the bee papers; hence, well and favorably known to the readers of this Journal. I have many similar testimonials to the merits of my stock from all parts of the Unted States and Canada. Please write me your wants for the coming season in the way of queens, nuclei and bees by the pound, and I will be glad to make arrangements in advance of the rush to give you prompt and satisfactory service.

H. D. MURRY, MATHIS, TEXAS

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The Review for 1916	$1.00	All four
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American Bee Journal for 1916	1.00	for only
Gleanings in Bee Culture for 1916	1.00	
One Review Honey Queen	1 00	$3.00
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For description of Review Queen, see another column. Address with remittance

THE BEEKEEPERS' REVIEW, Northstar, Mich.

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We have a clean lot of the yellow biennial variety; made a growth from 4 to 7 feet on dry land. When cut for seed, 7 acres made 42 loads on a 19 foot hay-rack 9 feet wide This variety makes a hay equal to any alfalfa. We can furnish clean seed for 20 cents per pound or $12 per bushel f. o. b. Kalispell. Write for particulars.

J. D. KAUFMAN, Kalispell, Mont

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CIRCULAR FREE

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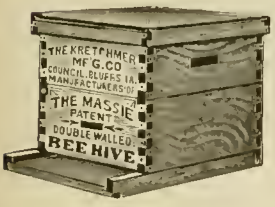

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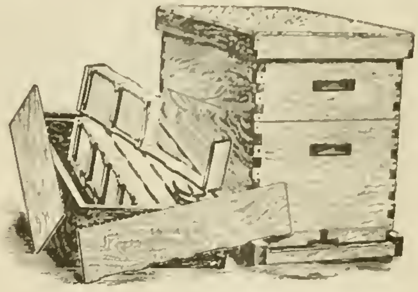

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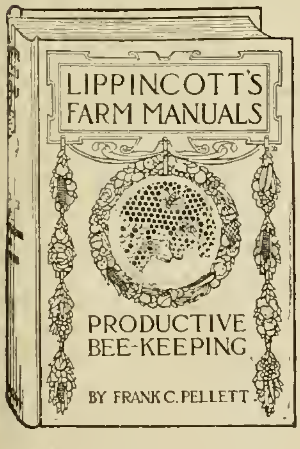
IS "PRODUCTIVE BEEKEEPING," by Frank C. Pellett



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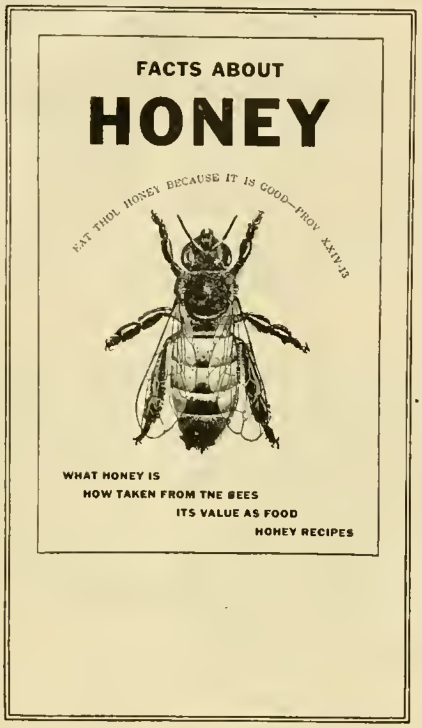
American Bee Journal, Hamilton, Illinois

FACTS ABOUT HONEY



FACTS ABOUT
HONEY
EAT THOU HONEY BECAUSE IT IS GOOD—PROV. XXIV-13
WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the "Food Value of Honey," on page 404, of the December number of this Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that we have prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra -	$ 5.00
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30 " " -	.75	2000 " " " -	17.00
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100 " " " -	1.25	10,000 " " " -	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

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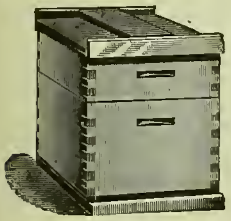
We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., **Marshfield, Wis.**



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Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

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Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
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Hamilton, Illinois

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Full line including seed corn. Write for price lists.
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Write our "All-Round Helps" Department if you are at all perplexed about what is best to do in the matter of lumber, for original work or for repairing. There are 41 volumes in the Cypress Pocket Library, covering all sorts of uses for the "Wood Eternal," and they are free to you Vol 1 is a reprint of Bulletin No 95, Forest Service, Department of Agriculture—a certificate of the U. S. Government. Better get this booklet. Vol. 36 tells how to make easy a dozen hard jobs in Carpentry. Each of the 41 books is free. Vol. 1 contains a list of titles of these books. Start with Vol. 1; it's free to you. Why not write right now?

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EARLY-ORDER DISCOUNTS ON

DADANT'S FOUNDATION

Send us a list of the bee-supplies and foundation you will need for 1916, and we will gladly quote you our best prices.
It will pay you to buy early.

BEESWAX— We buy beeswax the year around and pay highest cash and trade prices. Light yellow wax from cappings is especially wanted. Your BEESWAX worked into foundation at moderate rates.

NOTE Old combs, cappings, and slumgum rendered on shares. Send for our terms. We will get all the wax and save you a "mussy" job.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

MARCH, 1916

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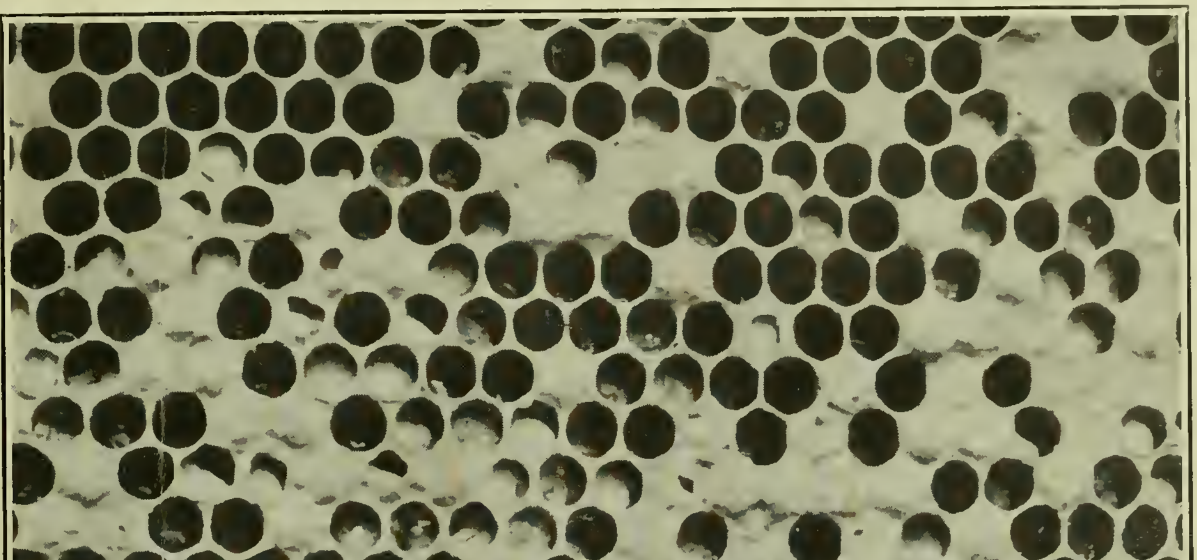


A Bad Case of European Foulbrood. This Disease is Especially Prevalent During the Early Spring Months

LEGHORN BREEDERS!

Send in your subscription to **The Leghorn Journal** and keep posted on the progress of the Leghorn industry; as it is devoted exclusively to the different Leghorn fowls. Subscription price 50c per year. Special offer—Send us 10c and the names ot five of your neighbors interested in Leghorns, and we will send you The Leghorn Journal for three months.

THE LEGHORN JOURNAL
Appomattox, Virginia

Honey Jars

No. 25 screw cap jars, 1-lb., $4.60 gross. Shipping cases, cartons and cans. Amber honey, 7½ cts. a lb. Light amber 8½ cts. a lb. on two 60-lb. can lots. Catalog of supplies free. I. J. STRINGHAM,
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

Bee-Supplies

LET US FIGURE WITH YOU

We know we can satisfy you on quality. Write for catalog.

C.C.CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

EVERY FRUIT GROWER

Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

BETTER FRUIT

and begin with the January issue our Special Spraying Annual. Subscription price $1.00 per year in advance.

BETTER FRUIT PUBLISHING COMPANY
Hood River, Oregon

Beekeepers' Supplies

Such as Winter Cases, Hives, Sections, Covers, Bottoms, Bodies, Supers, Brood-frames of every description. Shipping-cases, Section-holders, Comb-foundation, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Sheboygan, Wis.

Sweet Clover Seed

We have a clean lot of the yellow biennial variety; made a growth from 4 to 7 feet on dry land. When cut for seed, 7 acres made 42 loads on a 19 foot hay-rack 9 feet wide This variety makes a hay equal to any alfalfa. We can furnish clean seed for 20 cents per pound or $12 per bushel f. o. b. Kalispell. Write for particulars.

J D. KAUFMAN, Kalispell, Mont

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4 50	8.00	16.00
Warranted	1 10	5 50	9.50	19.00
Tested	1 50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen-

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

Our Reference—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

Preparedness Pays Big Dividends

So fortify and equip yourself with our 1916 Catalogue. Now Ready. Write toda

LEWIS' BEEWARE, DADANT'S FOUNDATION,
ROOT'S EXTRACTORS, SMOKERS, ETC.

Anything and everything you might need in Bee Supplies—and at righ prices. Ship us your old Combs and Cappings for rendering. Write for terms

THE FRED W. MUTH CO.

204 Walnut St. THE BUSY BEE MEN. CINCINNATI, O

QUEENS OF QUALITY

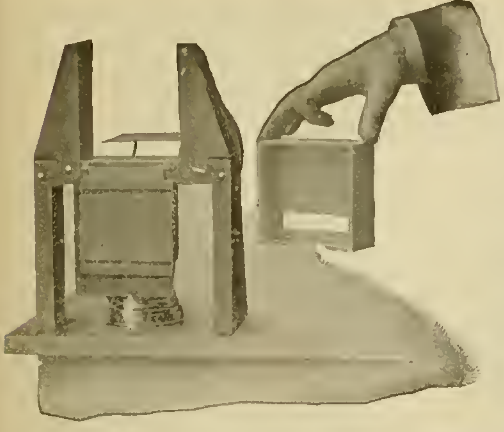
The Editor of the *Beekeepers' Review* and his sons have 1100 colonies of bees that they work for extracted honey. With all those bees working with equal advantage, all having the same care and attention, they have an opportunity unexcelled to ascertain without a reasonable doubt colonies desirable as breeders from a honey-producers' standpoint. Likely never in the history of beekeeping was there a better opportunity to test out the honey getting strain of bees than this. Think of it, 1100 colonies with equal show, and a dozen of those colonies storing 250 to 275 pounds of surplus honey this last poor (with us) season, while the average of the entire 1100 was not more than 40 pounds per colony. We have sent two of our very best breeding queens (their colonies producing 275 pounds surplus each during the season of 1915) to John M. Davis and to Ben G. Davis, both of Spring Hill, Tenn., and they will breed queens for the *Review* during the season of 1916 from those four superior honey-gathering breeding queens. Those young queens will be mated with their thoroughbred drones. Our stock is of three-banded strain of Italians, also that of John M. Davis, while Ben G Davis breeds that disease resisting strain of goldens that is becoming so popular.

By this time you are likely thinking that your strain of bees may be improved by the addition of this superior strain of *Review* queens, and how you can secure one or more of those superior honey-gathering queens as breeders. We will tell you: They will be sold to none except *Review* subscribers. If you are a paid-in-advance subscriber to the *Review* for 1916, we will mail you one of the daughters of those famous queens in June for a dollar. If not a subscriber to the *Review* for 1916, send $1.75 for a year's subscription to the *Review* and one of those famous young queens. Those queens are well worth $2.00 each compared to the price usually charged for ordinary queens, but we are not trying to make money out of this proposition, only we are anxious to have every subscriber of the American Bee Journal a subscriber of the *Review*, and we are taking this way to accomplish the object. A few of the very first orders for queens that we receive can be mailed in May, but the majority will not be mailed until June. Orders filled in rotation. Have your order booked early and avoid disapoointment. Address, with remittance,

THE BEEKEEPERS' REVIEW, Northstar, Michigan

WOODMAN'S SECTION FIXER

GOLD MEDAL



for the finest comb honey at the recent Michigan 50th anniversary convention, was won by Floyd Markham, of Ypsilanti Mich He says:

"We have several kinds of machines for folding sections and putting in the starters, but since we got one of your Section Fixers, about two years ago, no other machines for the purpose are used in our shop. It pays to use bottom starters and your Section Fixer is the only machine that I know of that will do the job at any rate of speed and do it right."

DO YOU KNOW that with this machine you always handle large pieces of foundation which makes the putting in of bottom starters easy. Special circulars will tell you all about it. Price $2.75 with lamp and one form block, shipping weight 5 pounds, postage extra.

A. G. WOODMAN Co., Grand Rapids, Michigan

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association and has incorporated with it the former Canadian Bee Journal.

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subscription price postpaid.

Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year.

Sample Copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL

325 Broadway - - Billings, Montana

Just What You Want

to bring repeat orders for your honey and at the same time increase consumption generally.

..... FOOD VALUE OF HONEY .....

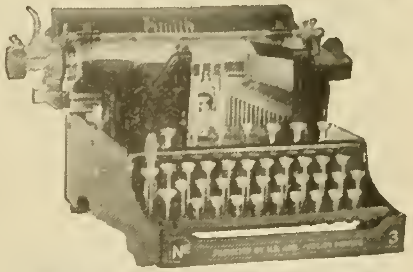
According to a table of food values compiled by the State Food and Dairy Department of Iowa, 14 oz. of honey is of equal food value to the following:-

11.2 ounces cream cheese worth at average prices	18 cents
20 eggs	30 cents
1 1-2 lbs. raw beefsteak	30 cents
1 lb. 14 oz. boneless codfish	40 cents
16 oranges	40 cents
1 lb. 1 oz. English walnuts	26 cents

Paste this label on every section of comb or jar of extracted honey, to inform your customers of the value of your product. We are prepared to furnish gummed labels like the above at only 60c a thousand or $1.00 for 2000 postpaid.

American Bee Journal, Hamilton, Illinois.

TYPEWRITER SENSATION



GREATEST TYPEWRITER BARGAIN EVER OFFERED

Only $2.00 a month until the bargain price of $29.60 is paid and the machine is yours. **This startling offer has astounded the typewriter world.** Absolutely the greatest typewriter bargain ever offered. For a short time only I offer a limited number of these standard,

VISIBLE WRITING MODEL No. 3

typewriters at this exceptional price. **Perfect machines, not damaged or shop worn.** Complete outfit, cover, tools, instructions, etc. Machine of standard size but light weight and portable, keyboard of standard arrangement writing the full 84 characters, two color ribbon, tabulator, back spacer, writes on ruled lines; **in fact every late style feature and modern operating convenience,** at less than a third of the regular price, and each letter visible as printed and all previous writing completely visible at all times.

FREE TRIAL You Take NO RISK

My brand new Model No. 3 offer for but $29.60—and only $2 per month.

I won't let you buy this typewriter before you see it. I want you to be absolutely convinced that this is the greatest typewriter bargain ever offered. If you have the slightest use for a typewriter you should accept this amazing offer. **You cannot equal this wonderful value anywhere.** When the typewriter arrives deposit with the express agent $5.60 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me $2.00 a month until my bargain price is paid. If you don't want it, return to the express agent, receive your $5.60 and he returns the machine to me. I will pay the return express charges **This machine is guaranteed just as if you paid $100.00 for it.**

ONLY 100 TYPEWRITERS At This Price

There is no time to lose. Fill in the coupon and mail it today—sure. The typewriter will be shipped promptly. There is no red tape—no solicitors—no collectors—no chattle mortgage. It is simply understood that I retain title to the machine until the full $29.60 is paid. You cannot lose. **It is the greatest typewriter opportunity you will ever have.**

Tear Out—Mail Today

H. A. SMITH, 230—231 N. Fifth Ave., Chicago, Ill.

Ship me your Model No 3, F.O.B. Chicago, as described in this advertisement. I will pay you the $24.00 balance of the SPECIAL $29 60 purchase price at the rate of $2.00 a month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

NAME..

ADDRESS..

....

BEES & QUEENS

Bred for Honey Production

Untested Queens - -	75c
Select Untested - - -	90c
Tested Queens - - -	$1.25
Select Tested - - -	1.50
One Pound bees no queen	1.25
Two " " " "	2.35

Canadian prices, express prepaid to Toronto, $3.25 queen included.

Chas. E. Hopper & Co.

HAYNEVILLE - - - . ALA.

QUEENS FOR EARLY SPRING DELIVERY

We conduct a Bee and Queen rearing business in Florida during the winter, and at Canton, Ohio, during the summer. We now have a carload of selected Italian Bees in Florida for the purpose of supplying you with BEES and QUEENS for SPRING DELIVERY. WE GUARANTEE PURE MATING AND SATISFACTION IN EVERY RESPECT OR MONEY REFUNDED. We are breeding from Queens that gave a surplus of 300 pounds per colony in a 24-day honey flow. Will it not pay you to have this strain of bees in your yard? Prices as follows:

Island Bred Italian Queens. Shipments begin March 1st.

	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00

Tested Breeding Queens, $5.00 and $10 each.

Prices on Bees by the pound f. o. b. shipping point.
Shipment begins May 10.

	1	6	12
½ lb.	$1.50	$ 7.50	$12.00
1 lb.	2.00	10.50	18.00
2 lbs.	3.00	15.00	27.50
3 lbs.	4.00	21.00	36.00
5 lbs.	5.50	27.50	50.00

(These prices are without Queens.)

Prices of Nuclei and Full Colonies without Queens. Shipping now.
1 Frame Nucleus, $2.00; 2 Frame Nuclei, $3 00; 3 Frame Nuclei, $4.00; 5 Frame Nuclei, $5.00; 8 frame Colony, $8 50; 10 Frame Colony, $10.

Address all communications to

THE J. E. MARCHANT BEE & HONEY COMPANY, - Canton, Ohio

THE BOOSTER

In its current and coming numbers will discuss the following policies which constitute its platform of principles.

First—Uniform quality of product, honestly graded and attractively displayed.

Second—A system of distribution that will protect the local producer, and prevent flooding one district and leaving others bare.

Third—A system of crop reports that will give accurate, detailed, and trustworthy information as to crop conditions in all sections promptly and intelligently.

Fourth—An efficient method of presenting facts and reasons for the wider use of honey in cooking, in the arts, manufactures, and on the table, to the people who who would use it if they knew.

Fifth—An association of beekeepers who will carry these things forward to a successful consummation.

Are you interested in these policies? Wrap a quarter in paper and send it AT OUR RISK, and get these valuable numbers, and the rest of the good things for the coming year.

Address, THE BOOSTER, Redkey, Indiana

Archdekin's Fine Italian Queens

3 BANDED

Prolific—Hardy—Gentle—They are Persistent—Profitable Producers—None Better

Prices	Before July 1			After July 1		
	1	6	12	1	6	12
Untested	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.00
Tested	1 50	8.00	15.00	1 00	5.50	10 00
Sel. Tested	2.00	10 00	18.00	1.50	8.00	15.00
2-fr. Nuclei	2.50	14.00	26.00	2.25	12.00	22.00
1-lb. pkg. bees	1.50	13 00	25 00	1.25	7.00	13.00
2-lb. pkg. bees	2.50	14 00	28.00			

Above prices of nuclei do not include queen. Add price of queen wanted. Satisfaction and safe arrival guaranteed. Absolutely no disease in this country. Get your order in early and secure prompt delivery. Orders booked if half of amount accompanies order. Queens ready April 15th. Nuclei and packages May 1st.

J. F. ARCHDEKIN, Bordelonville, La.

ROOT DOVETAILED HIVES are the STANDARD the WORLD OVER

Be prepared for a large honey-flow this year, as the outlook is unusually good!

PROMPT DELIVERY

is assured by

12 Factory Branches . . . . . 18 Principal Agencies

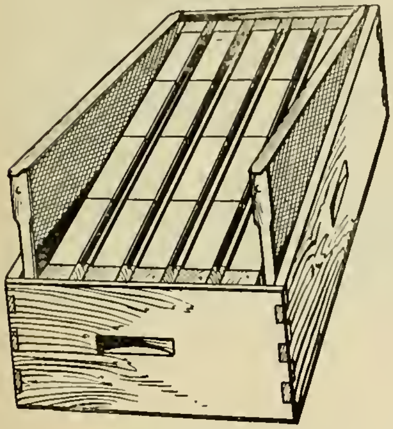
New York
Philadelphia
Chicago
St. Paul
San Francisco
Los Angeles

Send for 1916 Catalog

The A. I. Root Company
Medina, Ohio

Washington
Des Moines
Syracuse
Indianapolis
Zanesville, O.
Mechanic Falls, Me.

The New "F" Super and Its Advantages



The "F" Super is one of the new improvements which we have added to our line. It consists of a super holding 4x5x3-8 plain sections, and can be furnished in either eight or ten frame size. The eight-frame super holds 28 sections and the ten-frame 32 sections. This super is unlike many of the supers on the market, as it takes standard equipment, and offers the beekeeper, who, at any time might care to change over to extracted honey an exceptonally good item.

It can be used for extracted honey by purchasing 5⅜ inch frames which will fit the inside of the super or it can be used for comb honey. This saves the beekeeper from purchasing a whole new outfit should he ever care to change over to extracted honey and at the same time gives him an A-1 comb honey outfit for the same price as a comb-honey super can be purchased.

Any row of sections can be taken out and replaced with a shallow frame without making any other changes or adjustments. Some of our customers who have been substituting the shallow 5⅜-inch extracting frames on each side or in the middle are inclined to believe the bees enter the super much quicker.

Prices of the "F" super will be gladly furnished upon application.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

YOUR BEES ARE WINTERING

And this is, therefore, the best time for you to take up an inventory and send in your orders for supplies

Not only will you thus receive your hives, frames, supers, etc., in ample time to nail them up and prepare them for the spring, but you will also save 3 percent on the cost of these.

Early-order discounts for March, 1 percent. It pays to order now.

ROOT'S GOODS, WEBER SERVICE—The ideal combination

C. H. W. Weber Company

2146 Central Avenue, - Cincinnati, Ohio

Why Not Add a Lot of Pleasure, Strength and Safety to Your Work by Using Budd's Wire Imbedders?

The Original Aluminum Imbedding Tools

Easy to operate; sanitary; will not rust, corrode or discolor the wax. A trial will convince the most skeptical man that this method is the next best thing to using electrical current for this work. To secure best results use DITTMER'S make of comb foundation and get NICE STRAIGHT COMBS.

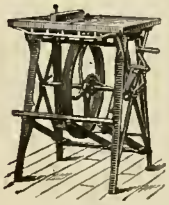
—Ask the Man at—

Gus Dittmer Company

SOLE AGENTS

Augusta - - Wisconsin

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it."

Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

TESTED QUEENS BY RETURN MAIL

$1.00 each

These Queens are not culls or inferior in any way because they are cheap. They were reared last September and October, and wintered in 4-frame nuclei, expressly for our early trade in tested queens We guarantee every queen to be good as the best. No disease in our apiary.

Untested queens early in April. $1.00 for single queen; $9.00 per dozen.

J. W. K. SHAW & COMPANY
Loreauville, Louisiana

THE WHOLE COUNTRY PRAISES

The New Lewis 1916 Beeware Catalog

From California—"Much pleased with your 1916 catalog. Other catalogs are all right for the man who knows the goods and knows just what he wants. Your cuts, description and arrangements are so good they will give delight to the amateur or the one who wants to know in detail of new things."

From Maryland—"We are in receipt of your 1916 catalog and wish to compliment you on the same."

From Texas—"Have heard quite a good many expressions from beekeepers who have received a copy of the 1916 Lewis Catalog, commenting on the beauty of this catalog and upon its improvement over any catalog that they have ever seen."

From Wisconsin—"Received your 1916 catalog. It is a dandy."

From New York State—"Congratulate you on its neat appearance. Each season it is a little better than the preceding one."

Send Right Now for a New Lewis Catalog

Here are only a few of the distinctive features contained in it

Our **NEW METAL BOUND DIVISION BOARD** in the full depth size, is to be found illustrated, described and listed.

A very good tool in the shape of a **KNIFE FOR SCRAPING AND CLEANING FILLED SECTIONS** is illustrated, described and listed.

A WOVEN WOOD AND WIRE CHEST, which is a low cost article with many uses, is illustrated and described.

One page is given over to the **RAUCHFUSS FOUNDATION CUTTING BOX,** a practical little outfit for the beekeeper.

Two other articles, a **SECTION HOLDER NAILING FORM** and **FRAME WEDGE DRIVER** are offered.

Two whole pages of **INSTRUCTIONS TO BEEKEEPERS** by **C. P. DADANT,** will be found interesting to the old beekeepers as well as the new.

One page devoted to the **PROSPECTIVE BEEKEEPER** is very interesting, and many new thoughts are presented.

Published only by G. B. Lewis Company

Manufacturers of Lewis Beeware, Watertown, Wisconsin

Get Your Copy Now

AMERICAN
BEE JOURNAL

Vol. LVI.—No. 3 HAMILTON, ILL., MARCH, 1916 MONTHLY, $1.00 A YEAR

A National Publicity Campaign for Honey

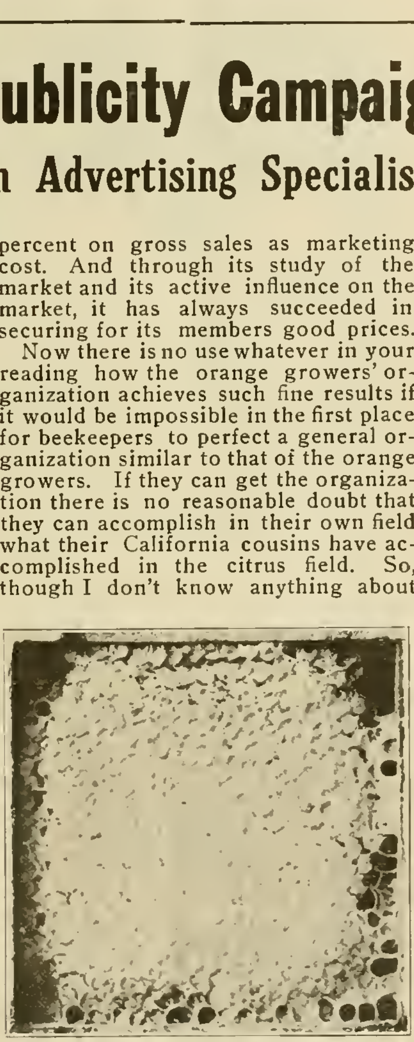
Suggestions of an Advertising Specialist—By R. C. Gano

"THERE has been much talk about national publicity for honey," said M. G. Dadant of the American Bee Journal in a letter to an advertising firm, "and if we can place facts before our readers that will enable them to unite on a feasible plan we will be glad indeed."

That letter landed on the desk of an advertising man whose job it is to buy advertising space in various publications for the clients of the firm. He must have happened to remember that another fellow in the company had written some articles for farm papers about the Sunkist and Sun-Maid campaigns, so he marked the letter to me.

Knowing what remarkable benefits the orange growers have secured through organization and cooperative advertising, I was mighty interested to hear that the beekeepers have the same bee in their bonnets. I know little about the honey industry except what Mr. Dadant's letters tell me, but they tell me enough so that I see plainly the beekeepers can profit from hearing the inside facts about what the California orange and raisin growers are doing. For instance, Mr. Dadant informs me that beekeepers are widely scattered and have no general organization, but only a few local organizations. The California orange growers present the opposite situation. They have what has been called by good authority the finest cooperative marketing organization in the world. It has not only the local associations, but these are grouped under district exchanges, and the district exchanges are members of the central exchange the official title of which is the California Fruit Growers' Exchange. This exchange thus handles the citrus crops of over 8000 growers, which means that it markets annually nearly two-thirds of California's entire citrus crop. It has so systematized the selling end of the industry during its 20 years of existence that in 1911-12, an average year, its total cost of operation was 2½ percent on gross sales. This is the lowest selling cost known in the food producing world. It is estimated that farmers pay 7 to 20 percent on gross sales as marketing cost. And through its study of the market and its active influence on the market, it has always succeeded in securing for its members good prices.

Now there is no use whatever in your reading how the orange growers' organization achieves such fine results if it would be impossible in the first place for beekeepers to perfect a general organization similar to that of the orange growers. If they can get the organization there is no reasonable doubt that they can accomplish in their own field what their California cousins have accomplished in the citrus field. So, though I don't know anything about the distribution of beekeepers, I am going to try to show why it is possible to effect the organization, no matter what their distribution over the face of the country.



The question then is: Can beekeepers of the United States and Cuba be brought into a single business organization similar to the California Fruit Growers' Exchange?

I think they can. The fact that the orange growers are concentrated in the southern half of a single State is an advantage and enables their exchange to do some things which it would be impossible for the more scattered honey organization to do. But it will be seen later that the three most important functions of the California Fruit Growers' Exchange are standardization of output, cooperative advertising and the maintenance of a central office which keeps thoroughly posted on market conditions. Its other functions are merely incidental. These three are primary, and the honey organization would be on equal terms with the citrus exchange so far as these three primary functions are concerned.

The California Fruit Growers' Exchange is composed of about 150 local associations, some of which have as many as 200 members. Each local association has a salaried manager, and an unsalaried board of directors, and owns a packing house. It superintends the picking, grading, packing and branding of the fruit, and ships direct to markets acting on advice from the district exchange.

The local associations are grouped under 19 district exchanges. These order cars and have them placed for loading, secure market data direct from markets and, through central exchange, are payees for all shipments by their local associations. The agent at market sends the money to the district exchange which deducts operating expenses and forwards remainder to the local association for pro rata apportionment to members.

The Central Exchange is headed by a salaried general manager, and has 19 directors, one for each district. It has its own legal, traffic, advertising, supply, and insurance departments, and is operated at cost. The Sunkist trademark belongs to this Central Exchange.

A BEEKEEPERS' ORGANIZATION.

Just as the local associations of citrus growers represent natural geographical subdivisions or groups, so the beekeepers of the United States must inevitably be divided into natural geographical groups. The beekeepers of Illinois might represent a convenient group for one local association, or those of southern Illinois and Indiana might represent a more convenient single group, while northern Illinois would group in with Wisconsin. Or possibly such groups would be too large, and these three States could form into say eight local associations each having from 50 to 200 members. Assuming that 60 local associations should be formed, including most of the progressive beekeepers of the United States, these might be divided into ten groups of six each, one of the six being made district headquarters, and each ten district exchanges could send national directors to a Central Exchange.

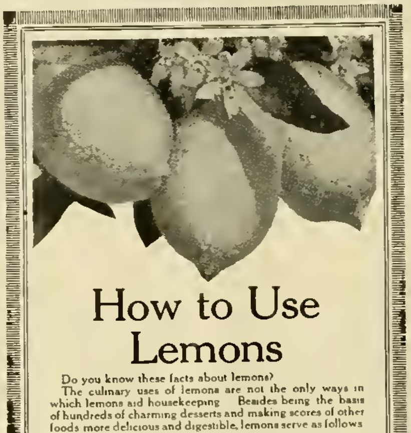
Get-together meetings might be much more rare than in the case of the orange growers, due to greater expense, but they could be held periodically, and form letters could be used in lieu of them for ordinary purposes.

To get united action in this matter is the greatest problem in connection with the entire project, and if the American Bee Journal succeeds through this article or a series of articles, in securing national interest which will result in a national organization it will have done probably the biggest thing that has ever been done in the industry. Personally, I think organization is bound to come, sooner or later, and it is certain that the beekeeper who takes the lead now in his community and works for organization will have a strong chance for preferment when national organization finally comes. It may come quickly or it may require years. Everything depends upon how many beekeepers take hold, read the signs aright, pitch in and work for it. That there are already some local organizations is promising. It shows that local organization may be expected to pay its own way even before the national organization is effected. And it may be stated as a truism that association of men engaged in the same line of business always pays, and pays better and better as the organization becomes wider in scope. It pays even if the organization is merely for social purposes. But it pays best when intelligent plans are formulated to *make* it pay.

It has been implied that such a national organization, when finally secured, could reduce selling costs to a minimum, and could secure for its members the best market prices. At present I understand that many beekeepers depend upon cutting prices to sell their product, but that doesn't mean that they wouldn't prefer the best market price if they could get it. Local associations would be only the first step towards national organizations, but it would be an effective step towards maintaining prices, as has been proved by the experience of the Colorado Honey Producers' Association. Their efforts are only partially successful, however, as the individual beekeeper who cuts prices is right at their shoulder. A national association would not eliminate competition. There would always be those who would stay on the outside and compete. Nor would its desire be to eliminate competition, for it would then begin to smack too strongly of monopoly. Its sole aim would be a cooperative effort to increase the public demand for honey by constructive advertising and to watch the markets with an eagle eye so as to know where supply is short and demand for honey active. Honey rushed to such points can always secure a good price.

Incidentally the advertising campaign would try to make the public ask, not for any old kind of honey but for the special brand put out by the national association, a brand which would be protected and which only members could use.

Now I am going to take it for granted that the beekeepers, however widely scattered they may be, all came originally from Missouri. I am going to try to *show* them briefly but clearly how the California citrus fruit growers, through cooperation, have put their marketing operations on an efficient business basis and have secured good prices. Then, when I get through with that, I am going to mention one or two other selling campaigns which may throw a little light on the honey-producers' problem.



How to Use Lemons

Do you know these facts about lemons?

The culinary uses of lemons are not the only ways in which lemons aid housekeeping. Besides being the basis of hundreds of charming desserts and making scores of other foods more delicious and digestible, lemons serve as follows:

As a Cleanser: Nothing will clean soiled hands more quickly than a piece of Sunkist lemon. Rub it over the hands and rinse off with water. It will remove even ink or fruit stains from the skin.

As a Hair Wash: Dip the hair in a basin of warm water. Rub the juice of a Sunkist lemon into the scalp. Rinse thoroughly, and dry with a soft towel. The lemon-juice removes dirt and grease, leaving the hair soft and glossy.

As a Sweetener for the Stomach: Squeeze the juice of half a Sunkist lemon into a glass of water and drink before breakfast for a few mornings.

To Make Tough Meats Tender: Most cuts of meat are immensely improved in flavor and tenderness if boiled in water in which a teaspoonful of Sunkist lemon juice is placed.

To Make Washing of White Clothes Easier: Sunkist lemon juice softens water and renders washing less difficult. It helps to remove dirt and grease, whitening and freshening white clothes. Do not use in washing colored clothes.

• • • •

There are scores and scores of profitable ways to use lemons and their juice. The above are modern short cuts which hundreds of thousands of housewives now use to make the day's work easier.

Try them. Then ask about other uses in which lemons play the labor-saving role.

California
Sunkist
Practically Seedless Lemons

In ordering lemons from your dealer be sure to say "Sunkist."

For these are the world's finest lemons — practically seedless, juicy and full-flavored.

Write for free book "Sunkist Salads and Desserts," containing many attractive orange and lemon recipes.

Sunkist oranges and lemons are sold by first class dealers everywhere at the same prices asked for ordinary kinds.

CALIFORNIA FRUIT GROWERS EXCHANGE
Co-operative—Non-profit
Eastern Headquarters, Dept 000, 139 N Clark Street, Chicago
(40)

Kind of Advertising Used to Advertise Lemons in Magazines of National Circulation

EXPERIENCE OF ORANGE GROWERS.

Back in 1895 the orange situation was much what the honey situation is today. Though at that time our national population was over 65,000,000, nearly two-thirds of what it is today, the California citrus growers found it difficult to sell at a fair profit an orange crop which was *one-ninth* the size of the crop they sell at a good profit today. These figures are absolutely authentic. The California citrus production in 1895 was less than 5000 carloads, whereas the normal crop today is 45,000 carloads. The orange crop has increased 900 percent, while the population has increased 50 percent, and this indicates what is an actual fact, namely, that the people of the United States eat today seven or eight times as many oranges in a year as they did in 1895. What has changed their habits, in this regard? Nothing more nor less than advertising.

In 1895 they not only sold fewer oranges per capita, but they received a smaller profit per box because the speculators got the producers to bidding against each other. The speculators knew the market. The producers didn't. So they had to take what they could get from the speculators.

In 1895 orange growers were every year afraid of over-production.

And lastly, in 1895 the consumer, when he bought a dozen oranges didn't know what he was getting until he had cut them open. He had no guarantee that they were juicy and sweet, and quite often some of them were not.

About that time the California Fruit Growers' Exchange was formed, because the growers realized that something would have to be done to develop a future for their business. To say that it began working miracles right from the start would hardly be an exaggeration. It studied the science of selling, and soon had the marketing end of the industry on a business basis. It began putting agents in the various market centers, and when a carload was ready for shipment it knew from its agents where to send it to get a good price. Fear of over-production soon became a thing of the past.

During the first five years of the Exchange's operation the citrus crop increased 255 percent, from 1900 to 1905 it increased 71.7 percent, from 1905 to 1910 it increased 10.9 percent, and from 1910 to 1914 it increased 48.5 percent. Two hundred million dollars is now invested in this industry in California.

It may be said that the putting out of agents was a form of advertising. At least it was personal salesmanship. Representing the citrus growers as they did, these agents did active promotion work for oranges in their territories, and it was their work in conjunction with general promotion work by the Exchange that marketed two crates where one had been marketed before, in the first few years.

In 1902 Pres. Story, of the Exchange, began agitating the question of newspaper advertising as a practical method of increasing consumption of exchange oranges and lemons. He was finally successful with his associates, and arrivals of carloads of California oranges at various markets began to be announced in the local newspapers. These announcements grew more frequent as they were seen to influence consumption, until finally the advertising campaign on "Sunkist" fruits had grown to big proportions.

In June, 1914, the distribution of Sunkist oranges and lemons having become quite thorough, the advertising compaign was expanded and entered a few magazines of general circulation in addition to the newspapers. An announcement to dealers after the campaign was in full swing stated that "These oranges are being advertised in 28,000,000 homes through the most widely read magazines and in 500 newspapers." In 1915 the campaign was again enlarged, a total of 54 advertisements being run in such magazines as Saturday Evening Post, Ladies' Home Journal, Woman's World, Collier's, Mother's Magazine, People's Home Journal, People's Popular Monthly, Ladies' World, Christian Herald, Literary Digest, Youth's Companion, Good Housekeeping, and National Sunday Magazine. It was estimated that the circulation of these advertisements, lumped, was over 52,000,000. As regards newspapers in 1915, the total circulation of the papers used equalled 15,000,000, and a series of 17 advertisements was run in each paper.

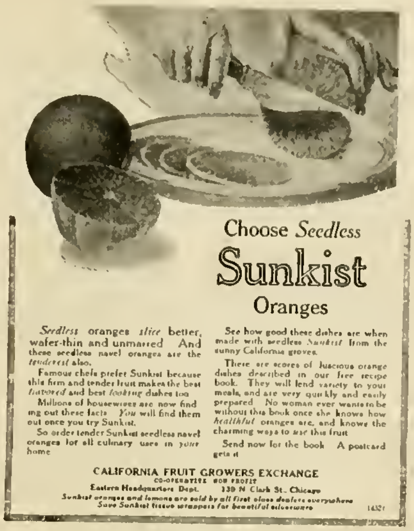
This year's campaign cost the Exchange $375,000 as against $225,000 in 1914. In 1915 the orange and lemon campaigns were conducted separately for the first time, $230,000 being devoted to orange advertisements, $100,000 to lemon advertisements, and the remainder being used for recipe booklets, announcements to jobbers and retailers, and premiums.

The silverware premiums given in exchange for Sunkist wrappers have played an interesting part in the campaign. By giving a value to the tissue paper wrapper, the Exchange gave consumers an extra inducement to ask for Sunkist fruits by name.

CHARACTER OF APPEAL.

The advertising has been designed to appeal to both emotions and intellects. That is, it has tried to make the public's mouth water for oranges by picturing them so that in the illustrations they look good enough to eat, and it has given reasons why Sunkist should be specified in buying oranges, instead of accepting just any brand, or no brand at all. For example, it is always emphasized that only the best oranges are packed in Sunkist wrappers, that they are picked ripe, this being possible because of refrigeration facilities and general speed in shipping, that the grading is done by experts, who know when an orange is sweet and juicy by looking at it, and lastly that the wrappers have a cash value. The advertisements offer a recipe booklet giving every imaginable way of serving oranges. As the campaign is designed to increase demand on retailers the booklet offer alone allows the Exchange to directly guage the pulling power of the advertisements. Consumers are not told that they can get the booklets from dealers, but that they must write to the Exchange for them.

Lemons are advertised in a very similar manner. The Exchange also markets a second grade of fruit under the trade name of Red Ball Oranges and Lemons.



Choose *Seedless*

Sunkist

Oranges

Seedless oranges *slice* better, wafer-thin and unmarred And these seedless navel oranges are the *tenderest* also.

Famous chefs prefer Sunkist because this firm and tender fruit makes the best *flavored* and best *looking* dishes too

Millions of housewives are now finding out these facts *You* will find them out once you try Sunkist.

So order tender Sunkist seedless navel oranges for all culinary uses in *your* home

See how good these dishes are when made with seedless *Sunkist* from the sunny California groves.

There are scores of luscious orange dishes described in our free recipe book. They will lend variety to your meals, and are very quickly and easily prepared No woman ever wants to be without this book once she knows how *healthful* oranges are, and knows the charming ways to *use* this fruit

Send now for the book A postcard gets it

CALIFORNIA FRUIT GROWERS EXCHANGE
CO-OPERATIVE NON PROFIT
Eastern Headquarters Dept. 139 N Clark St., Chicago
Sunkist oranges and lemons are sold by all first class dealers everywhere
Save Sunkist tissue wrappers for beautiful silverware

Sample Advertisement Used By the Orange Growers

How well the Exchange knows its market is indicated by the growers' experience in 1912-13, when unexpected cold weather reduced a crop which had promised to set a new record of over 13,000,000 boxes to a scant 5,000,000 boxes, less than half of the number of boxes shipped in 1910-11, and only 53 percent of the previous year's shipments. But the Exchange knew that the shortage would result in higher prices provided the oranges were placed right. Results were that while shipments equalled 53 percent of the previous year, cash returns equalled 79 percent.

I think it is obvious from the foregoing that the primary functions of the California Fruit Growers' Exchange are:

1. To insure that only first quality oranges are packed under the Sunkist brand.

2. To create and foster a growing consumer demand for oranges and lemons through advertising.

3. To keep in accurate touch with conditions in the orange and lemon market.

Incidentally the Exchange does many other things that it happens to be able to do on a wholesale scale for its members. For instance, it operates a supply company which is a stock company whose stock is held by the local associations and pays 6 percent dividends. This company has effected large savings in the purchasing of lumber, nails, etc,. for crating.

Dr. Bonney's Sign Beside the Railroad and Wagonroad

In the field of fruit production there are other instances of cooperation than that furnished by the California Fruit Growers' Exchange. The California Associated Raisin Company is not strictly an association but is a company organized along cooperative lines, for profit. It is beginning to do in the raisin field exactly what the Fruit Growers' Exchange has been doing. The Florida Citrus Exchange furnishes another example of successful cooperative advertising by citrus growers. The walnut growers of California are beginning to do cooperative advertising. The general experience of all these can add very little to what has been said, however, though details in their operation might repay study later.

BEEKEEPERS COULD DO LIKEWISE.

In conclusion I want to say that I think a national association of beekeepers might perform in the honey field all of the three primary functions performed by the California Fruit Growers' Exchange as listed above. Let us see.

1. It could certainly originate a brand new name and protect it, and it could see that all of the first quality honey produced by its members be packed under that name, and that no second quality honey be admitted. For second quality honey it could adopt a different brand name.

2. It could begin advertising in a small way, if it desired, picking out certain localities and using newspaper copy in an experimental way. That consumption of honey can be increased by advertising I believe has already been demonstrated by a private company which markets a brand called "Airline Honey." The campaign would naturally expand to national dimensions.

3. It would keep in accurate touch with conditions in the honey market by appointing agents at the various market centers, and in other approved ways.

That such a program would operate to secure rapid growth in the industry and a ready market for the increase I personally have no doubts. The orange growers today are figuring on no less an undertaking than the doubling of orange shipments from California in the next five years, though population increases only about 2 percent each year. They have only advertising to depend on to take care of this increase, yet they are getting confidently to work.

Honey is a commodity that the public knows little or nothing about. Only the other day my wife asked me how honey happened to come in little square frames, and I didn't know whether these frames were put into the hives, or whether the honey was put into them after it was removed. Incidentally we had honey on our table that evening for the first time since our marriage, unless I am mistaken.

AMERICAN
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA
BEE JOURNAL

PUBLISHED MONTHLY AT
1st Nat'l Bank Bldg. Hamilton, Illinois

Entered as second-class matter at the Hamilton, Illinois, Post-office.

C. P. Dadant, Editor
Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

IMPORTANT NOTICE.

THE SUBSCRIPTION PRICE of this Journal is $1.00 a year in the United States of America and Mexico; 3 years, $2 25; 5 years, $3 00; in Canada, 10 cents extra, and in all other countries in the Postal Union, 25 cents a year extra for postage. Sample copy free.

THE WRAPPER-LABEL DATE indicates the end of the month to which subscription is paid. For instance, "dec16" on your label shows that it is paid to the end of December, 1916.

SUBSCRIPTION RECEIPTS.—We do not send a receipt for money sent us to pay subscription, but change the date on your address, which shows that the money has been received and credited. In case of errors, please write us.

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THE EDITOR'S VIEWPOINT

Announcement

We are glad to inform our readers that our editorial staff is now increased by the addition of Mr. Frank C. Pellett, who will act in the capacity of Staff Correspondent.

He will need no introduction to the readers of the American Bee Journal of the past few years, for he has been a regular contributor and his articles are appreciated. Mr. Pellett, who is now State Inspector of apiaries of Iowa, a born naturalist and author of the new book, "Productive Beekeeping," has been furnishing us with a series of articles on "Honey-Producing Flora in the United States." In his new capacity, he will not only continue this series but will also supply additional writings and ideas on bees, both popular and technical. He will also act on the Advisory Board of the Bee Journal.

Mr. Pellett spent a few weeks with us, but his address remains, as before, Atlantic, Iowa.

Honey Day

We note that Honey Day was observed throughout South Africa two years ago on Aug. 20. There has been some agitation for a National honey day in this country, but as yet not enough beekeepers have become interested to make it a success. Poultry Day has also been observed in Africa with much apparent interest.

To Destroy Ants

We often hear complaints, from beekeepers in warm climates, that the ants are destructive to the bees. In parts of Africa they are said to drive strong colonies from the hives and to remove the honey and brood. Fortunately the species of ants which are common in most parts of the United States do little real injury to the bees.

The South African Beekeepers' Journal recommends the use of fat poisoned with arsenic and placed in tin cans with small holes to permit the ants to reach it while keeping everything else away. This remedy is said to be very effective, but since arsenic is a very dangerous poison, great care should be used with the poisoned bait.

Texas Field Meetings

The senior editor, C. P. Dadant, expects to attend the series of Texas field meetings which are planned early this month. March in the North is a cold and disaagreeable month with most of the bees still in winter quarters, but in Texas the honey flow is usually beginning. A number of county meetings are to be held during the coming two weeks, and we regret that we are unable to announce the dates and locations of these meetings. Mrs. Dadant expects to accompany her husband on this trip and will enjoy meeting the women folks.

Locusts and Honey

We already knew that when John the Baptist lived in the desert, he subsisted on "locusts and wild honey," Matthew III, 1-4, but it remained for Mr. John D. Whiting to tell us about locusts themselves eating bees and honey.

This writer, in the National Geographic Magazine, for December, 1915, gives a very interesting account of the modern "Jerusalem Locust Plague," in 1915, with splendid half-tones and vivid descriptions of the manner in which these insects invaded Judea, obscuring the sun and making a noise like "the distant rumble of waves." All the vegetation was destroyed within a very few hours and they even ate each other. Then—

"Nor was the craving for flesh restricted to locusts themselves, for they entered into beehives, and are reported to have spoiled them by eating both bees and honey. They likewise were seen eating ants."

We believe this one article is worth a year's subscription to the National Geographic Magazine. And we are not paid for saying it either.

Our New England Number

The April issue of the American Bee Journal will be a special New England number. We have in mind to give attention to a particular section, in this way, from time to time, and thus give our readers more information about the advantages of the various States. We believe that even our Texas and California readers will find this number of interest, though their local conditions are very different. Among the special contributions which we are promised for our New England number are the following:

"New England's Contribution to the Advancement of the Industry"—Dr. Burton N. Gates.
"Honey Flora of New England"—John H. Lovell.
"New England Beemen I Have Known"—J. E. Crane.
"New England Beekeepers' Societies"—Miss Josephine Morse.
"New England Honey and Honey Markets"—Allen Latham.
"Honey at New England Fairs"—A. W. Yates.

Minnesota Apiary Inspection

The printed report of the Apiary Inspector of Minnesota, Chas. D. Blaker, is on our desk. It contains a statement of the Census of Beekeeping in Minnesota, a report of the number of apiaries visited, colonies treated, etc., and lastly a description with cuts of the symptoms and cure of the brood diseases.

In this report, Mr. Blaker quotes an argument, by Inspector Frank C. Pellett, of Iowa, in the Iowa report, which shows very forcibly the value of beekeeping when compared to poultry raising, and is worth reproducing and remembering:

"Quite frequently one can hear the total production of poultry and bees compared, to the disparagement of the beekeeping industry. Such persons forget that 75 percent of the total figures represented by the product of poultry have already been counted as corn, wheat or other grain which had been fed to the poultry to produce the product, while with the honey produced we have a net resource. The bees gather the nectar from which the honey is produced direct from the flowers, and if it were not so used, it would be lost."

The Minnesota report may be had free by addressing Chas. D. Blaker, Inspector, 4420 Grimes Ave., Minneapolis, Minn.

The Airline Advertising Campaign

By far the biggest thing ever attempted in the way of National publicity for honey, is the general advertising campaign of the A. I. Root Company, for the Airline honey. Advertisements of this brand of honey have appeared in the better class of magazines of national circulation for the past two years as well as in most of the daily papers of the large cities. There can be no question but that this campaign has been of great value in steadying the market at a time when it was very much unsettled. A notable result of this general advertising has been the appearance of honey in many cafes, dining cars and other places where it had not previously been offered. While, of course, a special demand has been created for "Airline Honey," many new customers have appeared for honey in general, your honey and ours. No concern is big enough to absorb all the benefit from its own advertising, and only a large corporation is able to conduct a nationwide advertising campaign.

The Root Company has spent $50,000 in three years for advertising purposes, and this year has handled nearly a quarter of a million dollars worth of honey. While it is to be presumed that they have made a profit in the sale of such a large amount, they have made a market for many carloads of honey from sections where it was not moving freely previously.

Mistakes

During the winter months the daily mail is very heavy and mistakes are sometimes made in crediting subscribers for remittances. We are anxious to correct any error and trust our readers will notify us when mistakes occur.

Premiums at Fairs

One reason why better premiums are not offered for hive products at agricultural fairs is that beekeepers do not make their showing at the proper time. If the matter is brought before the fair officials at the time when they are preparing their premium lists it is often possible to get much better premiums. Two years ago the Iowa Beekeepers' Association addressed a letter to the secretary of every county fair in the State and enclosed a suitable premium list. As a result, in several counties where little attention had been paid to hive products, there is now offered a very creditably amount for premiums on honey and wax. Now is the time to get in touch with the officials of State and county fairs if anything is to be accomplished for the coming season. Even now many of the fairs will have their premium lists fully made up for this year. Wake up and call upon the fair officials if you want to help make the apiary displays worth while.

Overcome by Gas

We learn from the Ames, Iowa, Times, that Prof. Bartholomew, the well-known instructor in beekeeping and president of the Iowa Beekeepers' Association, and his family were accidentally overcome by gas produced by their heating furnace, to such an extent that Mrs. Bartholomew, the three children and a nurse were rendered unconscious. Had not Prof. Bartholomew himself been able to summon a physician, it is doubtful if the family would have survived.

How Long Have You Read this Paper?

We have a very interesting letter from Mr. George Hodges, of Belmont, N. Y. He writes that he has been a subscriber to the American Bee Journal for 30 years. This leads us to enquire how many on our list have read the Journal for a longer period. We would be glad to know how many have been subscribers for 30 years or more.

Sight in Bees

It has been written that "experiments indicate that insects are very short-sighted, none being able to see distinctly for more than 60 centimeters (24 inches) and bees much less than that."

Bees, at their first exit from the hive, fly around in circles to get fully acquainted with the spot where their home is. Whether it is a hollow tree in the woods or a movable-frame hive, they come back to it with the greatest precision, after having traveled great distances, through woods, fields or brush. No sense except vision directs them in this. It is true that at certain short distances they seem unable to readily distinguish objects. Perhaps, having two different sets of eyes, the compound eyes and the ocelli, they are somewhat in the position of a man who needs spectacles for short distance sight; there is a point at which his sight is inefficient, with or without spectacles

If we disturb a hive of bees on a cool day, when the bees are not active, but still able to fly at us, they will notice the intruder, after he runs away, at several rods. But if they have had no cause for anger he may think himself unseen by them because they pay no attention to him.

The editor of Gleanings in Bee Culture, in his December number, holds that bees fly longer distances in some localities, because they may be able to see fields of blossoms across a valley two or three miles away. Although this may be a little excessive, it seems to me much more plausible than a short vision. Both, however, may be true if we accept the possibility of long vision from the compound eyes and short vision from the ocelli.

It is accepted by many entomologists that bees have short vision. But to explain their return home from a distance there is no other way than a very good distant vision. Some men, Gaston Bonnier of the Paris Institute among them, claim the existence of an additional organ which they call "organ of direction." This is a mere surmise. Bees find their way home only from places where they have gone before. If we carry a hive of bees outside of the range of their harvest, none find their way back to the old spot. This we have tested hundreds of times.

I have seen a bee come to a very short single blossom of white clover, at my feet, when there was not another blossom within 40 feet. That flower was in a lawn, among the blades of blue grass, and the bee either saw it or smelt it. I believe it did both.

The Sense Organs of the Mouth Parts of the Honeybee

We are again called upon to notice a very scientific and thorough study of bee anatomy, by Dr. McIndoo, the same man who has already given us a study of the olfactory organs. This work, as minute in its details and as scientific in its descriptions and its terms as the former work, is not intended for the average reader.

Dr. McIndoo says that from the definitions given "it is evident that the senses of smell and taste in vertebrates cannot be sharply separated, and the present paper will show that these two senses in the honeybee cannot be separated at all. In the honeybee it will be shown that the sense of taste is only one phase of the olfactory sense."

Experiments were made in feeding foods containing repellents, such as carbolic acid, oil of peppermint, whiskey, etc., and judging from these experiments "we are certainly safe in saying that the bees avoided the foods containing repellents on account of the odors emitted from these substances."

The results obtained demonstrate honey best of all foods, and that they are able to distinguish marked differences between various kinds of honeys. Substitutes for honey as food may be better in a few instances, but these investigations indicate that no substitute can be had which will be liked by bees as well as the best pure honey.

In order that bees may show preferences between foods emitting weak odors, it is first necessary for them to eat a little of the foods, which would seem to indicate that bees may have a true sense of taste. Yet Dr. McIndoo prefers to consider it merely as a phase of the olfactory sense, and he calls this faculty olfactory-gustatory. No organs have been found that are anatomically adapted for receiving gustatory stimuli, and it is Dr. McIndoo's opinion that bees do not have a sense of taste.

It would be nothing strange to hear a practical beekeeper say, "It doesn't seem reasonable to think bees don't taste. We know there are many things that have a distinct taste, and yet have no smell; sugar, for instance. Quinine has no color, yet no one would call it tasteless. Now if bees have no taste how can they decide about things that have no smell? How can they tell sugar from quinine? Even Dr. McIndoo's own statement contradicts his opinion. He says that "when bees are given foods with weak odors they first eat a little to decide whether they like the food or not." What is that but tasting?

Dr. McIndoo's reply to this is interesting. He says:

"As Parker has already said for vertebrates, and as we well know for ourselves, it is almost impossible to determine whether we taste or smell certain substances when we eat them. To us sometimes a food, before being eaten, emits only a faint odor or no odor at all; but when we eat it, we perceive a pronounced odor. In such a case the odorous particles are not given off until the food is taken into the mouth and mixed with saliva.

"The same principle is certainly applicable when bees eat candies which contain undesirable substances emitting extremely weak odors. As quickly as the saliva has dissolved the candy and has had time to effect a chemical or physical change, the odorous particles are given off, and since the olfactory pores on the mouth-parts are nearest the food, they are the first ones to receive the odorous particles. For this reason the so-called gustatory sense in insects is only a phase of the olfactory sense."

Dr. McIndoo has slightly modified his opinions concerning the olfactory organs of the bee. In his paper on "The Olfactory Sense of the Honeybee," in the Journal of Experimental Zoology, kindly sent to us by him and mentioned in the American Bee Journal in June, 1914, Dr. McIndoo doubted the existence of olfactory organs in the antennæ, where practically all scientists before him located them. In that number of the American Bee Journal, page 199, 1914, he wrote: "It seems that the antennæ have nothing to do with the sense of smell." We were loath to accept this view, as were most of our practical beekeepers and as was Dr. Bruennich, of Zug, who wrote, in a review of the McIndoo study, page 382, November, 1914, the following statement as his own conclusion:

"The sense for fine odors, for discovering honey sources, perceiving foreign individuals, sexual odors, etc., *is* situated in the antennæ."

In the present exhaustive work on the sense organs of the mouth, Dr. McIndoo says, page 28: "Olfactory pores were found on the mandibles, maxillæ, labial palpi, tongue, side of head, in the buccal cavity, on the cervical plate and *on the bases of the scapes of the antennæ*." (Italics ours.) This makes us feel a great deal better on the subject, for we have been unable to fully accept the statements advanced locating the organs of smell mainly on the legs, on the wings and on the sting. However scientific and careful a study may be, there are so many minute organs to consider, that no positive deduction may be made, unless it apparently fully agrees with the testimonials of practice. The practical beekeeper has long ago noticed that the bee uses its antennæ most actively to recognize the queen, or the bees of its own hive from strangers, to scent honey, to care for the brood, to visit the flowers, in fact in every motion that it makes. We would welcome, as a confirmation of our convictions, a statement that the most sensitive, though perhaps also the least visible olfactory organs of a bee had been discovered at the very tip of each antenna.

Dr. McIndoo has promised us some articles, explanatory of his studies, to be published shortly. They will be welcomed by our readers in both hemispheres.

Farm Beekeeping—Missouri

We are told that the Missouri farmer "wants to be shown" before he will accept new things. Here is a very neat pamphlet issued by the Agricultural Experiment Station of the University of Missouri, intended to show the farmer how to become a practical beekeeper. It would be difficult to put more information in 40 pages than is contained in this Bulletin No. 138. It is written by E. E. Tyler and L. Haseman, and contains some 20 cuts, most of which are original, and may be had by addressing the Experiment Station at Columbia, Mo.

We would suggest that in the next edition they add a chapter on how to recognize and cure foulbrood. It is necessary knowledge these days.

Fertile Workers Laying in Drone Cells

Why do fertile workers lay eggs in drone-cells by preference? Once and only once, I saw a laying worker in what I supposed the act of laying in a worker-cell. Her wings were pushed up about her ears in such an uncomfortable manner that I have always supposed she preferred the larger cell because more comfortable, which notion is strengthened by the fact that she prefers the still larger queen-cell to a drone-cell. C. C. M.

Sixth Annual Apiculture Short Course in Ontario.—This Short Course was held at the Ontario Agricultural College at Guelph, Jan. 11 to 22.

Fifty-nine lectures and demonstrations were given, covering the different phases of beekeeping. Typewritten copies of each lecture outline were distributed to the class so the main points could be followed closely and carried home for future reference. As far as possible the lectures were illustrated with stereopticon views and the actual objects under discussion. Members of the class were also given laboratory practice in hive construction, and a visit was made to the apiary of a successful beekeeper in the neighborhood of the college.

In conducting this course, the Provincial Apiarist, Mr. Morley Pettit, was assisted by F. W. L. Sladen, Apiculturist, Central Experimental Farm, Ottawa; F. E. Millen, B. S. A., Lecturer in Apiculture and State Inspector of Apiaries for Michigan; F. W. Krouse, President of the Ontario Beekeepers' Association; James Armstrong, Selkirk, Vice-President of the Ontario Beekeepers' Association; also some of the apiary inspectors of Ontario. Lectures on allied subjects were given by other members of the college staff. Mr. Frank C. Pellett, State Apiarist of Iowa, paid the class a visit and lectured on beekeeping conditions in his State.

It is proposed to hold a summer school for beekeepers at the Ontario Agricultural College some time in June when bees are active and apiary practice will be possible. Persons interested should write at once for particulars to Morley Pettit, Provincial Apiarist, Guelph, Ontario.

Dr. C. C. Miller's Personal Recollections

Life Story of America's Best Known Beekeeper

[Continued from February.]

ABOUT that time there was started The Marengo Collegiate Institute, and I became one of its teachers. A large building was erected, expenses were beyond income, and in a year it was a financial failure. To me had been assigned the collection of tuition and the paying of teachers' salaries. When the books were closed I had $50 cash and a small pile of old boards as payment for my year's work.

I was in charge of the Marengo public school at $600 a year for one year. After an interval I was hired again at $900, and years later spent another year at it at $1200. For a time I ran a small select school. In the meantime I gave piano lessons and taught singing-school evenings, and at one time had enough of this to do to make a good living, and for perhaps two or three years devoted my whole time to it.

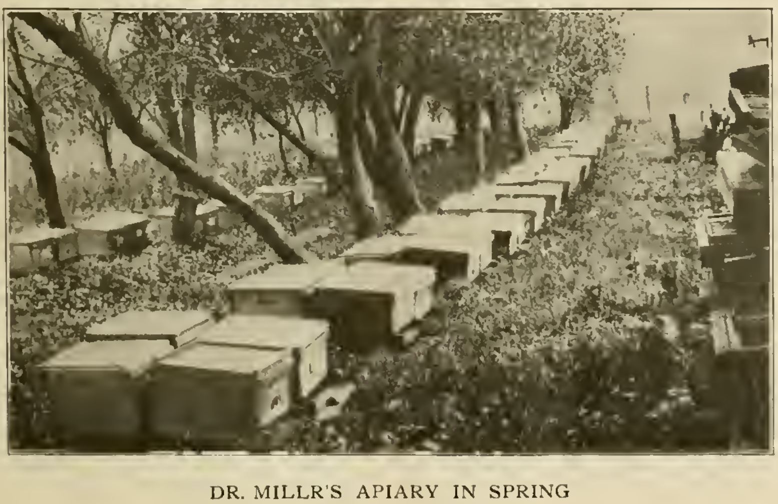
August 12, 1857, I married Mrs. Helen Maria White, a widow with one child, Nellie, a sweet child 8 years old, who died July 8, 1860. A daughter, Katie, was born April 12, 1859, and died Dec. 8, 1859. A son, Charles Clinton Miller, was born Aug. 28, 1868. I expected him to be a beekeeper, but he was of a different mind. He enlisted in the regular army, then secured a clerkship in the United States War Department, became a soldier again at the outbreak of the Spanish-Cuban war, and at its close became a clerk again in the War Department, where he has ever since held a responsible position.

My wife died March 18, 1880. November 15, 1881, I married Miss Sidney Jane Wilson. A year later her sister, Miss Margaret Emma Wilson, stopped school teaching for a year, to live with us and help at beekeeping. Her temporary stay became permanent, and she has been a very important member of the family ever since. Without her intense energy and efficiency I never should have accomplished what I have in beekeeping.

Dr Miller as He Looks Today

In 1899 my wife's mother, Mrs. Margaret Wilson, took up her abode with us, remaining until Jan. 24, 1913, when she took her departure to her heavenly home, nearly 94 years of age. Her presence in our home was a constant benediction.

My father came of a musical family, and I inherited something from him in that lineal. At family worship a hymn was always sung, and I recall that whichever of the family happened to be the baby, at the time, always added its quota to the noise, if not to the music. So I suppose that is where I began my musical career. I have delightful memories of the hour spent every Sunday afternoon at home singing hymns. When I was 9 years old I took an active part as singer at political meetings, whooping up the elder Harrison for president, on at least one occasion being taken to help in a neighboring town. I served time as a fifer in the Pennsylvania militia. When a lad I led the singing in prayer-meeting, and have been chorister in church or Sunday-school about ever since, part of the time being organist as well.



DR. MILLR'S APIARY IN SPRING

When a boy I got somehow enough money to buy a violin, and walked 8 miles to Youngstown to buy it. But I never became a distinguished violinist. I also got a flute which I learned to play. I was anxious to learn to play the piano, but pianos were scarce, and the opportunity did not come till I was 22. Then, to add to the chance I had for practice, I drew on paper a representation of the keys of a piano, and practiced on that. At Marengo there was a time when I made a good living by giving piano lessons and teaching old-fashioned singing-schools. Something like two years I spent traveling for Root & Cady, introducing their Graded Songs at Teachers' conventions and institutes. When Moody and Sankey went to Europe, I became a chorister for about two years in the Moody church and Sunday-school. Several of my musical productions were published, one of them, "The Singin-Skewl," having quite a sale. I wrote both words and music of that, the words coming as one of a series of contributions made to The Song Messenger, a musical monthly published by Root & Cady. Some of these were afterward published in a booklet. All were written under the *nom de plume* of "P. Benson Sr., whitch the Sr. it stands for singger." I wrote the music for most of the bee-songs written by Hon. Eugene Secor. At 84 I sing in the church choir and am chorister in Sunday-school.

When I was a child it was the custom to take all babies to church and Sunday-school, and so I suppose I began such attendance before three months old. I've kept it up ever since. When something over 40 years old I was for several years secretary, and subsequently several years president, of the McHenry County Sunday-School Association, and then for a number of years president of the 2d District (comprising six counties) of the Illinois State Sunday-School Association. This is interdenominational work, which I felt obliged to give up when perhaps 75. Denominational (Presbyterian) work has had much of my attention. I have been a ruling elder in the Marengo Presbyterian church most of the time since 1857, and as such had the highest honor that can be put upon a Presbyterian layman: I was sent as a commissioner to the General Assembly by the Presbytery. While a member of the Moody church I was assistant treasurer. When about 75 years old I became a chairman of Committees on Young People's Work in Freeport Presbytery (consisting of nearly 30 churches), having to do with Sunday-schools and Young People's societies. I resigned several years ago, but the resignation was not accepted, and notwithstanding the incongruity of a man of 84 in that position I am still there. For several years I was chairman of the Synodical Committee, having care of reports from all Illinois.

Interest in fruits and flowers has brightened my whole life. The 37½ acres we now occupy I bought as a place for a fruit farm, and acres of it were set in apples, cherries, pears, raspberries, and strawberries. I was the first secretary of the Northern Illinois Horticultural Society, and one year president. Roses have been for years a specialty, and in 1915 there are more than 150 plants, most of them the choicest remontants or hybrid perpetuals. In 1913 I became aware of the great strides made in the improvement of the gladiolus, and in 1915 have more than a thousand gladioli growing. I am trying to keep down the numbers, preferring a smaller number of the choicer kinds, although as yet I have paid no more than $2.00 for a single corm, and have only 40 varieties.

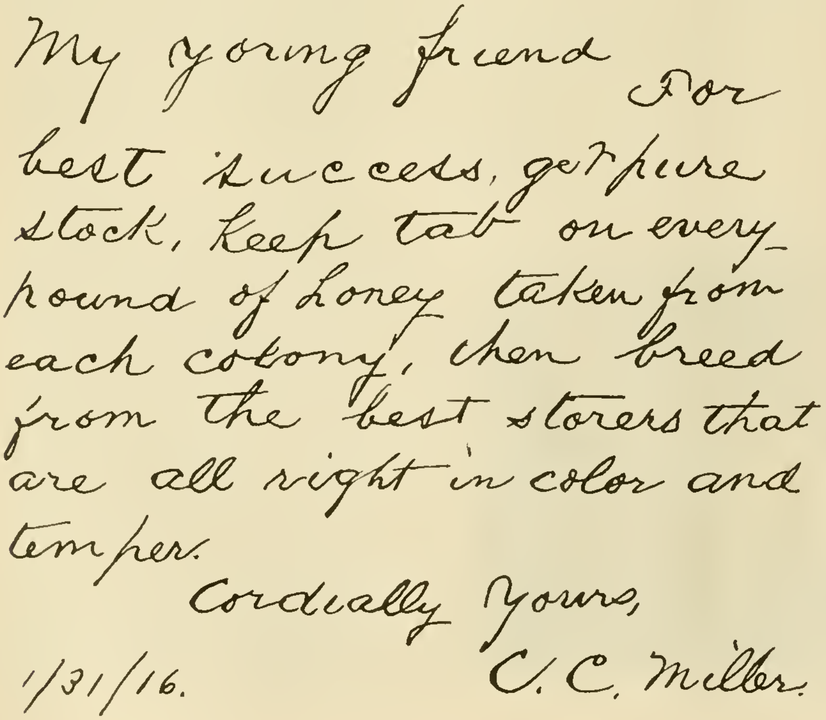
About July 4, 1861, I was in Chicago, and a swarm of bees came flying over our home in Marengo. My wife got the swarm in a sugar barrel, and that started me into being a beekeeper. My first writing about beekeeping soon began, a number of articles over the *nom de plume* of B. Lunderer being published in the Prairie Farmer. Hardly worth while to say more about my career as a beekeeper, since it has mostly been put in print in the bee-journals and "Fifty Years Among the Bees." The friendship of beekeepers, some of whom I have never seen, has been much to me. I take pride, pardonable, I hope, in having been one of the many editors of the Standard Dictionary, and in having held the record for the largest yield of section honey from as many as 72 colonies.

DR. MILLER'S APIARY IN MIDSUMMER

To get a goodly sum of money for a crop of honey is a pleasure. But I don't think that alone would have held me to beekeeping. For every minute I have ever spent thinking of the money I'd get from my bees, I've spent 20 minutes — more likely an hour — in studying over plans and projects for improvement in the management of bees. And at 84 I think I have just as many schemes cooking as I had at 30. Most of them have turned out the wrong way, but enough have succeeded to be of some use. I never made any great invention, never had the slightest thought of inventing a hive, but some little thing here and there, perhaps making some slight change in the plans and implements of others, entitles me to the credit of some things I may here mention.

Bottom-board (the reversible bottom-board has been called the Danzenbaker, but I don't know of anything to entitle it to that name); bottom-rack; Miller frame; Miller queen-cage (3 kinds); top ventilator in cover over sections; cork-chips for drinking tubs; foundation-splints; Miller feeder; bottom-starters in sections; newspaper plan of uniting bees; robber-cloth; bee-escape (in robber-cloth); short cut in curing European foulbrood; super-filling-board for filling sections in T-super; pounding bees off combs with fist; pendulum plan of shaking bees off comb.

[The end.]


My young friend For
best success, get pure
stock, keep tab on every
pound of honey taken from
each colony, then breed
from the best storers that
are all right in color and
temper.
Cordially yours,
1/31/16. C. C. Miller

Immunity

BY D. E. LHOMMEDIEU.

Is it the bee-master or the bees that are so-called immune? I believe anything that prevents the spread of bee-diseases tends toward exemption or immunity. There is no bee-yard anywhere in the United States but may at some time contract either of the foulbrood diseases. The careless beekeeper should quit the pursuit. But if you are in it for other than the dollar entirely, you need not be afraid of the foulbrood diseases.

First, next spring when you set your bees out for the summer, don't put them in nice straight rows so they will take a fine picture, don't set them in two and two, or three and three sets, but study the location of each individual hive, study the line of flight to the open, so the bees of one hive do not fly too closely in front of its neighbor, as the hive nearest to the open will get some stray bees, and the farther hive might be the one to contract the disease; as a result you would have two diseased colonies in a little while. Have some special mark, a stick, bush, stone, or anything different from the hives anywhere near by. Give plenty of room where you can; it pays.

Second, if you are a careless beekeeper, you are far from being immune, do not set your bees to robbing, do not let the disease get a start. Lift a brood-comb from the center of the colony next May, in dandelion time, looking carefully for even a diseased cell, if none, pass to the next hive, etc. Keep in touch with each hive every three weeks until they are in shape for winter.

Third, we turn to the bees themselves. Any strain of bees that are disposed to rob and forever prying around other hives, slipping in just wherever they can, are the ones that will carry and contract diseases first; breed from such as show a disposition to get right out into the fields for stores. Weed out the robbers and persist in this, even if you are obliged to change your present stock; if you are a close observer you can soon mark the robber hives to be requeened. My experience with blacks and goldens is that they are bad on this one point. That is why the blacks are not called immune. If the American foulbrood once gets a start in any hive, you will find that no race or strain will clean it up so that you can depend upon it, if you leave the bees to clean out the combs.

Colo, Iowa.

[The elder Dadant, who lived and kept bees in localities where foulbrood was unknown and who never saw a case of foulbrood was nevertheless very particular in giving each colony, as much as possible, an independent flight opening through the bushes or trees of the apiary. He insisted, as does our esteemed correspondent, that when two or more colonies have a confused flight-opening, there is considerable danger of one of them gaining many stray bees, from the others, especially when first removed from the cellar or when the young bees take their first flight. Either the strongest, or as Mr. Lhommedieu puts it, "the nearest colony to the open" will be likely to gain at the expense of the others. There is probably more in this than most of us realize. Successful beekeeping is made of details.—Ed.]

The Bee Pirates of Africa

We beekeepers who must use so much care to prepare our bees for the long winter months sometimes feel that beekeeping must be a joyful business in warm countries where they can fly every day in the year. In reading the literature relating to bees kept in such climates, we are struck with the number of annoyances which the beekeeper meets that are unknown to us of the lands of snow and ice.

A recent number of the South African Beekeepers' Journal devotes much space to the habits of the bee pirates, notes upon which may interest our readers.

The bee pirates are digger wasps. Two species are given as destructive to the bees. Other species are common in America but are not referred to as enemies of bees, since they capture other insects which are taken to their burrows to furnish food for the larvæ. One of the African species is said to catch the bees on the flowers, while the other catches them more frequently at the hive entrance. As many as 400 pirates have been captured around one hive. It will be apparent to the reader that such a pest must be very serious in the apiary. It is not an easy matter to deal with such a nuisance. About the only effective methods are swatting them by hand as they fly about the hives or setting traps. Two kinds of traps which have proved effective are described. Covering branches of trees with bird-lime and placing them near the hive is one of the methods described.

A DIGGER WASP, *Sphex ichneumoneus.*—(From Banks, Bulletin U. S. National Museum

When a pirate alights on the branch its feet are held by the sticky matter, such as "tanglefoot" in catching flies. A white plate or basin filled with water and oil is also recommended. The plate method is said to be the simplest and most effective way of fighting the banded pirate which comes to the hive to capture its prey. Some bees also fall into the water, but the number is small compared with the number saved from the pirates destroyed by the traps. Paraffin is given as the best oil for the purpose. No method has as yet been devised for catching the species that capture the bees afield as their habits are such that very small numbers could be caught by any trap.

The pirates are not large insects, measuring but little more than half an inch in length.

Honey Sources in Tennessee

BY ADRIAN GETAZ.

Read at Southern Conference for Education and Industry at Chattanoogea, Tenn., April, 1915.

The first source of honey in Tennesse is from the maples; not from their flowers but from the holes made in the bark by the woodpeckers. Sap exudes from these holes at any time during the winter when there is a spell of warm weather.

Then comes the blossoming of the elms and maples. These furnish both nectar and pollen. The elms blossom a little earlier than the maples. The time is very irregular, according to the weather. If early, the blossoming is gradual, being interrupted by every cold spell that occurs. Later the pear trees peach trees, plum trees and a few others less important bring their contributions. In this latitude no time can be set for their opening. The apple trees require more heat to develop and therefore do not open until spring actually comes. The date for their blooming is more regular than for the other fruit trees. Here, around Knoxville, it is about April 1. They are in bloom about three weeks; occasionally, when the weather is very warm only two. The orchard business is neglected in many localities throughout the whole South, and the yield of nectar and pollen none too good at its best. Add to this the interruptions in the gathering, from cold or rainy weather, and it is easy to understand why often the colonies are too weak to take advantage of the flow when it comes.

White clover has never given me any surplus. It begins usually a week or so before the end of fruit bloom and keeps up brood-rearing in the interval between it and the poplar (tulip tree) blossoming. The statement has been made often that south of Mason and Dixon line white clover doesn't amount to anything so far as the production of honey is concerned. There might be an exception where the soil is rich and moist.

Our first surplus comes from the tulip tree. Here it begins during the last week of April or the first of May. The yield is heavy and seldom fails. It lasts 20 to 25 days. The honey is dark amber with a reddish tinge, the taste a little strong. The black locust and honey locust bloom at about the same time, but do not yield as much. Their honey is medium or golden amber, and has a better taste than the poplar honey.

The next source of surplus is honeydew. This is extremely variable in quantity and quality. It comes chiefly from the hickories and white oaks. There is no regular date for its appearance; sometimes in May or June. It lasts anywhere from nothing to four weeks. It may be scant in quantity or abundant enough to actually drip from the trees. It may be fairly good or abnormally bad. Often it is good at the beginning but gets bad as the season advances. When good, if the word good may be used, it is of a medium amber color with a blackish tinge, just such as would be produced by a small amount of ink mixed with amber honey. The taste is slightly nauseating as far as I can describe it. If the crop is taken in sections, that peculiarity disappears in three or four months and leaves a honey of good quality. But if the honey-dew is bad, quite dark, and of an abominable taste, it is not fit for anything.

When there is a honey-dew, there is a gap between the poplar and the persimmon blossoms. This last begins on or a little before June 1, in this locality and lasts 10 or 12 days. The yield is usually good and the honey of good quality, medium amber in color. If the weather is not too dry, some minor sources, weeds and such give enough to keep up brood-rearing during the gap. There is also a gap between the persimmon and sourwood blossoming, unless there are lindens in the locality, which is not the case in this neighborhood.

Sourwood honey, if pure, is the best we have in America. It is water white, very sweet in taste with just enough of a delicious aromatic flavor to fulfill the the highest ideal of what a nectar fit for the gods should be. But it is not often pure. Some honey-dew or persimmon honey may have been deposited in the comb previously. Or there may be a mixture of linden honey if there is any tree within reach. The sourwood begins to bloom about June 20 and lasts until the middle of July. This ends the flow or rather the surplus season. I understand that the lindens begin to bloom about a week before the sourwoods, and that their blossoming lasts about three weeks.

Sometimes the sourwood crop fails completely. At that time of the year there is an increase of rain that corresponds to the rainy season of Cuba, South Florida, etc., and some years showers occur almost every day and interfere with the gathering of the nectar. Nectar in small quantities is obtained from different sources after the main flow, from melon fields, cowpeas, soy beans, cotton, etc. These depend upon the amount of rain that may fall. After a good rain, they start nectar production only to stop after a few days. One of the chief conditions for the production of nectar is an abundance of moisture in the ground. There must be enough to supply the evaporation through the leaves and some besides for the nectaries.

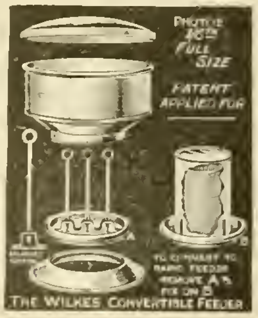
Of these small sources, two need special mention. One is the late flowering sumac. The yield is good, but unfortunately there are too few bushes to amount to anything in the line of surplus. It blossoms during the middle of August. With enough of it a fair surplus might be obtained. The other is a tall perennial plant similar to the wild-sunflower so far as the stems and leaves are concerned, but with an entirely different flower. I do not know the English name of it. I think the botanical name is *Verbesina occidentalis* (L) There was but little of it when I came here, but it is gaining ground in some localities. It resists the summer drouth better than all the other summer plants. If the weather is not too dry some surplus is obtained, about once in three years. The blossoming is during early September. The honey is somewhat darker than medium amber, but good.

The fall honey comes altogether or nearly so from the asters. These blossom during the last half of September and the early part of October. A light frost does not injure them. The yield would be good if the days were long enough and warm enough to permit the bees to work freely on them. Usually they get enough to make up their winter stores. Once in a great while some surplus can be obtained. The honey is white and quite good, but candies very soon, even when in sections.

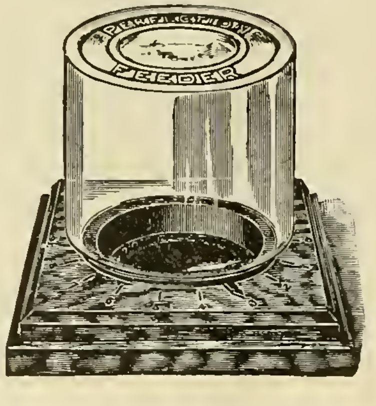
Knoxville, Tenn.

The Wilkes Convertible Bee Feeder,

No. 69


PHOTOS
FULL SIZE
PATENT APPLIED FOR
A
B
TO CONVERT TO RAPID FEEDER REMOVE A & FIX ON B
THE WILKES CONVERTIBLE FEEDER

Perfection Feeder,



British Feeders and Feeding

BY D. M. MACDONALD.

EVERY beekeeper, all the world over, recognizes the necessity for feeding his bees under certain circumstances, and almost every individual has his own favorite form of feeder; consequently there are many styles and shapes, while their names are legion. Before dealing with a small selection of those used in this country, it may be well to enquire "when should we feed ?" Whenever it is discovered that a colony of bees becomes scant of stores from whatever cause, prompt and effective means should be taken to remedy the wrong.

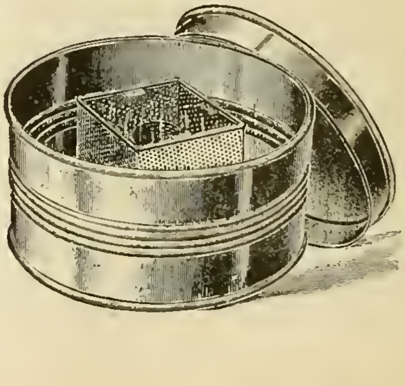
Before entering on the long spell of cold weather, whatever colonies are not provided with the 25 to 30 pounds of good healthy stores deemed necessary for safe wintering, must be fed up to this ideal winter cupboard with syrup. Then, frequently, we desire to increase our forces, and stimulate our bees and queens to carry on breeding at an accelerated pace in order that the syrup fed may be turned into workers who will still further swell our strong forces. Our queen-rearing boxes, our spring weaklings, and the small lots made for increase also demand careful feeding to keep them breeding right on to the end of the season to make "more bees."

At the different seasons syrup of varying consistency should be fed, and at different times the amount supplied must be controlled. Hence we require different kinds of feeders, because we desire at one season rapid consumption of the stores while at another period we desire the bees to take down only ounces. The words "take down" show that we almost universally place our feeders overhead. It will be noted that No. 1, the "Perfection," is a glass bottle resting on a wooden block. It is well suited for stimulative feeding, and can be easily regulated to any number of ounces for daily consumption. The index shown can be turned to any figure from 1 to 10, thus opening that number of holes and making them available to the bees. It is in very general use with the single-hive man, as well as with those possessing up to a dozen colonies.

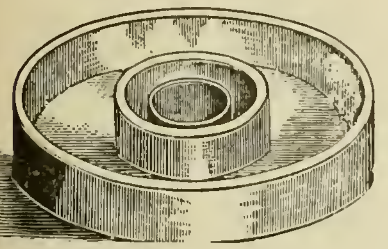
A rough and ready, but albeit perfectly effective, form of this feeder is found in a one or two pound glass honey jar. By placing only one fold of thin cloth over the mouth and tied on it is a rapid feeder, with two thicknesses it yields a medium supply, and with three it becomes a slow feeder. The rapidity of consumption is also made to vary with the thickness of the cloth used.

A more artistic but equally effective feeder is shown in No. 2, the Wilkes convertible feeder, which can almost instaneously be altered from a slow yield to a rapid supply of the syrup being fed. Section A can give one, two or three holes, and when removed and B is substituted, it yields a copious supply. All three act on the suction principle. Bees have to suck down the syrup, which until then is held up by the air preventing its escape into the hive. The bees, while scarcely quitting the cluster of the brood-nest, can supply themselves with a steady yield, just sufficient to induce and keep up breeding or at the will of their keeper, enough to store some in the brood-combs for spare stores. These feeders suit almost any contingency during most of the year, but in

Autumn Rapid Feeder,



Favourite Feeder.



autumn when it is necessary to feed rapidly another set of feeders is used, acting on a different system.

When feeding up winter stores in September, now being almost universally recognized here as *the* time to feed bees (spring stimulation in autumn), these appliances require to provide ready access to the syrup by a large force of bees at one time. We have this secured in illustrations 3, 4, and 5. The first is made of tin, an objectionable medium perhaps for feeding bees, but it will be noted that the bees come little in contact with this material, as the footholds found around the interior are made of circular rims of wood on which the bees rest when sucking up the syrup. Number 4, the "Favorite," is constructed on the same principle, but it has the advantage of being all wood, being turned out of a solid block; therefore, bees take to it readily. Of late years it is becoming very popular, and bids fair to be the regular favorite with surburbanites and similar classes of beekeepers.

Both of these have the advantage of being easily cleaned, a necessity if the food given to the bees is to be wholesome and guaranteed to keep well. Bees have to leave their warm nest and ascend to the syrup compartment, but during early autumn that is no detriment, as if the food is supplied hot this space is as warm as any part of the hive. A strong colony carries down 5 to 10 pounds of syrup. Yet another style is very popular. With these the bees have to rise still higher above their frames. The well known "Canadian" feeder is a first-class specimen of the type, and is almost universally used in this country when feeding up driven bees in autumn, My own took 10 pounds of syrup at one time, and a special one had a capacity for 20 pounds. They did very efficient and rapid work. and with one, or at most two fillings, supplied the necessary winter stores.

Illustration No. 5 shows a reliable and rapid float feeder, every part of it constructed of wood. It is generally made longer than shown, and the compartment in which the food is found is divided from the other by a division of perforated metal through which the syrup runs, raising the float gradually, so that no bees are drowned. It is generally supplied with a sheet of glass for an inner covering, to show when it needs replenishing, and over this is fitted a wooden lid or cover. To enable bees to ascend to the food in each case the quilt or lower coverings have a round or square hole to provide access. If there are four, the piece is so cut in each that one when folded back points to each point of the compass, thus securing a level site for the feeder.

Formerly I did open air feeding, but later the presence of other bees induced me to discontinue it. A very large glass case was hung from the roof of a shed, to which the bees had ready access. Even in rainy weather they worked in comfort under shelter. Another open air feeder was in the form of a shallow trough into which a small quantity of *warm* syrup was poured every hour on fine days. The food was little more than sweetened water and served to keep bees contented.

Another feeder, somewhat like No. 5, had two compartments, one for nitrogenous and the other for non-nitrogenous food. I was able to feed not only syrup but also flour inside the hive.

What we call soft candy is a favorite food with many. In winter and early spring it is the only food admissible. The provision of a two or three pound cake above the frames saves many a good colony from death. At times it is medicated, and in spring, very generally mixed before cooling with rye meal or flour as "bee-bread" for the baby bees.

As a spring stimulant, I prefer a fine fat comb reserved from last autumn. For gentle stimulation the cells are merely scratched, and the honey does not run, but the bees scent the rich store and gradually turn it into more bees. This is an excellent spring stimulant.

Pollen in most seasons is rather scarce, so I supply a substitute by placing an artificial supply in corners of the garden only on bright days, and on very sunny ones I fill the crocus cups as I go up and down the rows in two large beds of the bountiful bee flower. Water is amply supplied, often renewed, and given as warm as possible.

Three other plans deserve at least mention, the frame syrup feeder, and the dry sugar feeder favored by Simmons, both used at the side of the cluster, and feeding with comb the cells of which are scratched and then placed flat above or below the brood-nest. I rather like the last.

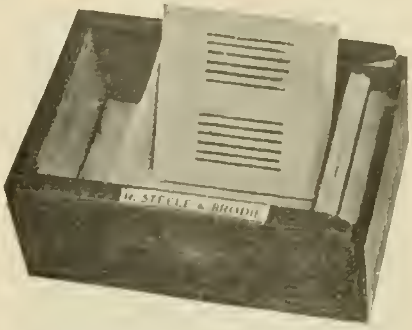
Bauff, Scotland.

Food Value of Honey

BY J. E. CRANE.

I CONFESS it was a treat, on opening the American Bee Journal for December, instead of the often repeated statement that honey is a luxury, I found a well illustrated article showing very conclusively that honey has greater food value per pound than most other articles of diet that are esteemed necessities, and for which more money is paid.

Let me give another illustration: Take a pound of butter that costs 32 cents, and work into it a pound of good granulated honey costing 16 cents, and we have, at the cost of 24 cents a pound, an article that the average boy or girl would prefer to spread on their bread to butter alone. I believe there can be no mistake about the correctness of these statements, and the question at once presents itself how can these facts be brought before the mass of consumers. I suppose no nation ever spent so much for advertising as the American people. Almost every paper, magazine or periodical has all sorts of ads, religious and secular, political and business, pictorial and plain, ads that bring results, and ads that waste money.



I doubt it will ever pay to advertise snowshoes in New Orleans, or hardware in a ladies' fashion journal, but advertising is nevertheless a very practical way of educating people on many subjects. The present use of cereals for breakfast food has come from the extensive advertising of these foods. The margin on the sale of honey is too small to admit of such expensive advertising, but when I saw that article in the American Bee Journal I said at once, why cannot this or something like it be put in a leaflet or folder and given away with each retail sale of honey? If I go to the drug store and buy a tooth brush or a bottle of turpentine I am pretty sure when I get home to find a little leaflet wrapped about the bottle. Cannot we beekeepers take the hint? A leaflet on the "Food Value of Honey" would doubtless be read by all lovers of honey, and what is of even more importance, they would tell their neighbors and friends about it, and so the news spreads, for it would be news to the great mass of people.

I believe we would be surprised if we knew how much people talk about what they eat, especially children. Why not give them a chance to talk intelligently about honey? People who buy and eat honey do so because they like it, just as girls buy and eat candy and boys buy and smoke cigarettes. How much better would it not be if they knew that the use of honey in our diet is as legitimate and as economical as the use of eggs or oranges?

What kind of a folder shall we have? The facts should be boiled down to the limit. Whether a leaflet or a larger folder, it should be made as cheap as possible so the beekeeper or bottler can buy and use them by the thousands, so that as our goodly land flows with milk and honey, it will all be called for at paying prices.

Middleburry, Vt.

The Passing of a Well Known Beekeeper

BY J. E. PLEASANTS.

DELOS WOOD, a well and favorably known beekeeper of southern California, has recently passed away. He was born near Madison, Jefferson

Delos Wood on His 75th Birthday

Co., Ind., Jan. 10, 1838. At his marriage, which took place November, 1861, he purchased a part of his father's farm, which had been his boyhood home, and built for himself, living there until he came to California.

During these years he was a breeder of fine stock, introducing into this county the first Costwold sheep, Chester white hogs, and Light Brahma fowls; all of which he raised and sold at high prices, winning many premiums at State and County fairs. He was also indirectly the means of introducing other fine stock into that section.

His father had been a beekeeper in the old-fashioned way of many years ago, and the son continued the business under new and improved methods, being the first in that part of the country to introduce Italian bees and use a honey extractor.

He was prominent in the Grange movement, and for the greater part of his life a writer for agricultural and apicultural journals. He was for many years a regular correspondent of the Indiana Farmer. After the starting of the Western Honey Bee, a few years ago, Mr. Wood's articles entitled "Chips," had a regular place in its pages.

Mr. Wood was a soldier of the Civil War, having served partly in the State service, but chiefly in the 29th Indiana Infantry.

He came to California October, 1881, and since that time his home has been in Santa Barbara and the immediate vicinity. He was all the while more or less engaged in bee-culture. In 1884 he had charge of an apiary of 700 colonies, from which was sold 20 tons of extracted honey at $200 per ton wholesale; most of it being shipped to Europe.

Later he owned a small ranch a few miles from Santa Barbara, where he devoted himself to the rearing of bees and strawberries. One season he sold $300 worth of berries from one-fourth acre. In 1905, in Mr. Wood's absence, the ranch was swept by a mountain fire and all buildings, apiary, etc., were completely destroyed, as well as much timber. Since this occurrence he has not been in business for himself, but has been employed by several of the leading beekeepers of the southern part of the State, chiefly in Ventura county. For the last three years he was associated with W. H. Allen, of Saticoy, and had arranged to remain with him another year.

Mr. Wood was for many years a member of the California State Beekeepers' Association, and was made a life member some years ago.

He died at his home, 725 East Gutierrez Street, Santa Barbara, Calif., on Jan. 6, 1916. Although his health had been failing for some months, his last real illness was very brief. He attended a meeting of the State Association at Los Angeles, was caught out in a cold rain without sufficient protection, and contracted a heavy cold. He came home New Year's night in another rain. The cold rapidly developed into grippe, which, with heart failure, ended his life in five days. He lacked four days of being 78 years old.

He is survived only by one daughter, Miss M. C. B. Wood, his wife having passed away nearly 17 years ago.

Orange, Calif.

No. 15.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(Photographs by the author.)

In this series of articles we have given the same attention to the pollen flowers as to those that secrete nectar. While the latter are much more important it is very desirable that the beekeeper be familiar with the sources of pollen as well. In this article we present some plants which are of value as pollen producers only, and which cannot be said to be "honey plants."

ELDERBERRY.

The American elder or elderberry is a common shrub from New Brunswick west to Saskatchewan and south to Arizona and Texas. Figure 70 shows the flower clusters of the common elder, *Sambucus canadensis.* Since the plant blooms late May and June, there is usually an abundance of pollen in most localities. The bees, however, gather the pollen freely at times, and it is of value where pollen is not plentiful at this season.

The berries are used for pies and wine. The flowers and bark are used to some extent for medicinal purposes.

HOPS—*Humulus lupulus.*

The common hop plant is too well known to need description. It is common from New England to British Columbia and southward. It is very generally cultivated for making yeast and for medicinal purposes. The small greenish flowers are wind pollinated. It furnishes pollen in abundance but no nectar. Fig. 71.

PEONY.

The cultivated peonies are introduced from Asia, and are commonly grown for ornament. Most varieties are double and produce no pollen. The single varieties, however, produce pollen in abundance, and at times the bees seek them eagerly. The writer has seen as many as six to eight bees gathering pollen on a single blossom. Fig. 72.

Atlantic, Iowa.

Copyright: 1916, by Frank C. Pellett.

Michigan Short Course.—We have just received the program of the Michigan short course in beekeeping which will be held at the Agricultural College at East Lansing March 13 to 18. Prof. Morley Pettit, of Ontario, and Mr. Ira D. Bartlett, of East Jordan, will assist Prof. Millen in giving the lectures. A very attractive program is outlined, but space will not permit presenting it in full.

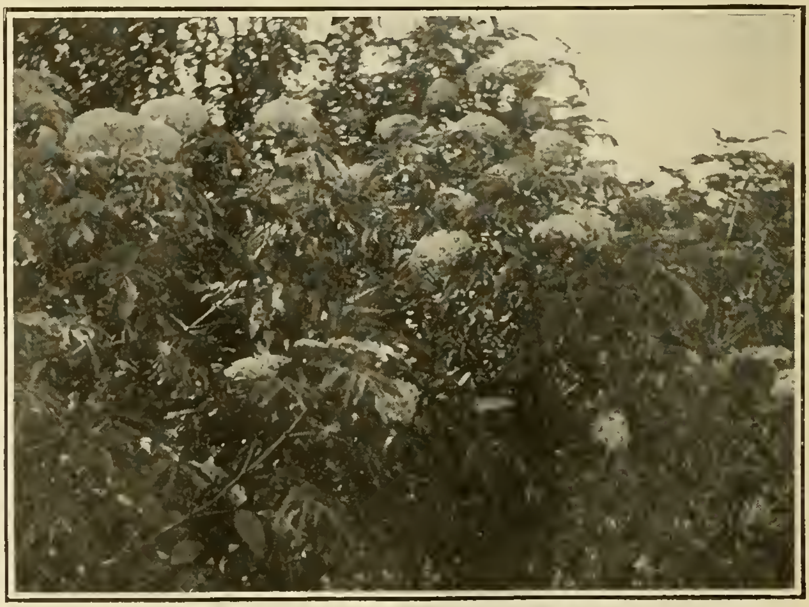


FIG. 70—ELDERBERRIES IN BLOOM

FIG. 71.—HOPS ON A ROADSIDE FENCE

A Venture in Southern Beekeeping—The Season's Work

BY J. F. ARCHDEKIN.

(Continued from February number.)

THE spring of 1915 was a very backward one all over the South. Old residents of this section told me that it was the latest spring in 30 years. Our bees had a fair amount of stores, but as soon as brood-rearing started in strong and the population of the colonies began to increase, these stores diminished rapidly. There was some bloom out, but it was so cold and cloudy that the bees could hardly get a chance to fly. When a nice day did happen along they brought in large quantities of pollen from a small yellow flower that grows all over the fields and from wild berries and willow. But the nectar secured was negligable, so that by the middle of March we had to begin feeding sugar syrup.

The feeding was done in the open from wash tubs, so the wild bees, of which there are immense numbers in the woods, were fed gratuitously, I was kept busy every day making syrup and looking after the yards, so that shop work had to be neglected. It was very discouraging, to be sure, but as the old saying goes, "Every cloud has a silver lining," we determined to see the game through. By the first of April a good part of our colonies were in fair shape as to strength, but none of them had more than two or three days' supply of stores. They were down to their last biscuit, so to speak. If only the tupelo, whose buds had been swelling since March 1 would open, all would yet be well.

Then all at once the weather cleared. Willow, which had been in bloom for some time, began to yield. A day or two later the tupelo opened and such a scramble I never saw among bees. In just three days colonies which had been in a starving condition were crammed with honey and the queens honey bound. An apiary was the busiest place I had ever been in. To hear the noise one would imagine a first-class job of robbing to be in progress. All the bees old enough to fly went to the fields, so that on opening a hive it appeared to have lost half of its population, and cross! I never saw bees as cross in my life. They were about as sociable as hornets.

White clover began to bloom in a few days, so that we had three sources of white honey at the same time. The best of these were tupelo and willow. White clover does not seem to yield here like it does in the Central States, although it is as plentiful here as I have ever seen it anywhere. The rush continued 10 days, during which time our bees stored a fair crop of honey. Then we had rain and a cool spell for a day or two that practically ended the tupelo and willow. Soon after this a red colored honey began to come in a light flow which lasted all summer. This long summer flow is the finest thing imaginable for queen-rearing and making increase. Combined with the warm, even temperature of this climate it makes the queen-breeder's life happy.

By Aug. 1 we had a fair crop of red honey on the hives, and were on the point of splitting our colonies in two for increase when I was seized by an attack of appendicitis. We started for New Orleans the night of the 10th, and the next morning I underwent an operation. I was in a desperate condition but am happy to relate that I came out fine, although there was some doubt for a few days. It was a harrowing experience.

This ended my bee-work until the middle of October. Although I got home Sept. 4 I had to lay by and have done very little work until lately. About Sept. 10 the fall flow came on in earnest, but the hives were already packed with the summer flow, and so this crop was lost. The fall honey is a light amber and is very delicious. This lasted until Nov. 1. Bees are still at this date (Dec. 10) bringing in pollen on warm days.

The sources of the honey flows and some other interesting features have been mentioned only incidentally. I will now endeavor to tell what I have been able to observe during the short time we have been here. I have no technical knowledge of botany and am not able to give the names of many flowers which are important honey sources here, and some sources I have not located yet.

This locality is surrounded by swamps on both sides of the Bayou. In these

FIG. 72—SINGLE PEONIES PRODUCE QUANTITIES OF POLLEN

Clematis—Photo by Pierre Odier

swamps grow an endless number of different trees, bushes, and plants, the bloom of which is visited by bees. A naturalist would be wild with delight over the flowers, insects, animals and birds which they contain.

The first flower that opens is a variety of wild lettuce. It springs up quickly and covers the fields. Wild berries and field daisies and a large number of other flowers whose names I do not know immediately follow it. Then hawthorn comes on, and as it is in endless variety it lasts until midsummer. All these furnish plenty of pollen and some nectar, especially the hawthorn. Willow and tupelo furnish the nectar for the spring honey crop. Willow only yields pollen at first, but when it and tupelo open up, there is as the song has it, "A hot time in the old town." Toward the last of the tupelo white clover yields, but is not very important, at least it was not this year, although it is abundant.

There are whole forests of tupelo all around the inside of the Bayou, and tupelo honey is therefore the principal one composing the blend. Being a natural blend this is an excellent honey of heavy body and good flavor. It is practically a white honey, the tupelo giving it the faintest lemon shade which is characteristic.

Soon after the close of the tupelo flow a thin red honey begins and continues all summer. A glass of it held up to the light resembles very closely a glass of wine in color. It is a very poor grade of honey and has a very pronounced sour taste. A peculiarity of this honey is that it fermented in the combs this summer before and after it was sealed. I don't remember ever having heard of honey souring in the comb after being sealed, and I am informed by resident bee-men that it has never occurred before. Every hive in all our apiaries contained fermented sealed honey. I do not know the source. The swamps are almost impenetrable during summer, and the mosquitoes are so bad that I did not attempt to locate it. Some of the lakes are covered with water hyacinth which bees visit, but it is not plentiful enough to yield all this honey.

About the middle of August a weed called senna blooms and a number of other field plants, and the flow gradually increases so that by Sept. 1 a heavy flow develops. By Sept. 10 the goldenrod and horsemint begin to bloom, and these two furnish the nectar for the fall flow. There is some Spanish-needle, too. Like the tupelo, the extent of these plants is immense. I saw one field of goldenrod 1000 acres in extent. The yield is wonderful. The bees work just as hard as they do in the spring flow, and as these two sources last a month a big crop can be secured. Unfortunately I was not able to take advantage of it this year owing to my convalescence from the operation.

This is the best table honey to be had anywhere. The horsemint honey is water-white, but the goldenrod colors it to a light amber. It has a smooth pleasing flavor and a heavy body. From the opening in the spring until Nov. 1 there is never a day that nectar cannot be secured except rainy days. There is such a multitude of flowers that the flow never stops.

Before coming here I was told that ants were very bothersome and would kill colonies in this country, but I find this to be a mistake. There are none of the big black ants common in the Central States. Instead there is a small red ant which occasionally gets into the crevices around a hive and makes a nest. They are harmless, but they have a slightly larger brother red in color that gets under a hive bottom if it is set down flat on the ground and makes a nest. He is a fierce fighter if disturbed and will bite one's hands. As far as I can see he does the bees no harm, and if the hives are blocked up

The pictures show two honey plants which bloom here in August and September. The Persicaria was visited by thousands of bees. The Clematis was less sought.
—Pierre Odier, Celigny, Switzerland.

off the ground as they should be there will be no ants under them. In fact, the country is remarkably free from enemies of the bee, the only one worth mentioning being a large black spider which occasionally gets into a hive during the winter and spins a web to catch bees, but he can't cause much trouble.

There are two periods when it is most profitable to make increase. The first is at the close of the tupelo. Two or three frames of brood with adhering bees can be taken from each colony and put in a hive on a new stand together with a ripe cell. The hive can be filled out with frames and they will draw out a set of combs and store a super of honey in the full flow.

Then about Aug. 1 the extracting stories can be set off on new stands with what bees they contain and a couple of frames of brood and a cell. These will also fill a super of honey in the fall. I have demonstrated the above plans and know that it can be done. It is possible to treble the number of colonies in one season and secure both the spring and fall crops which are the most valuable ones.

Bordelonville, La.

Displays as Advertising

BY G. W. JUDGE.

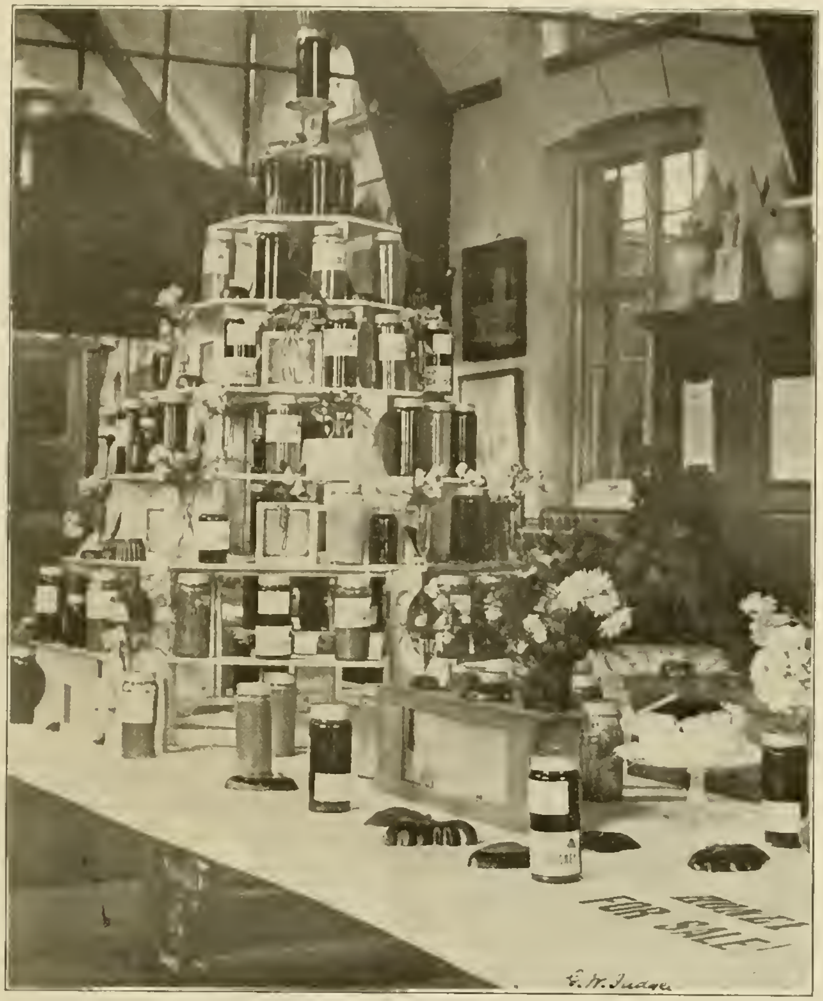
MANY beekeepers complain that they experience great difficulty in disposing of their honey and wax. This in many cases is the fault of the beekeepers themselves; they fail because they do not cultivate that enterprising spirit which characterizes the successful business man.

The public generally is very ignorant on the subject of honey and its uses, and even in these enlightened days I have repeatedly been asked how to separate the honey from the wax of a first-class section to render it fit for the table. Honey is generally regarded more as a luxury than as a food. This being so it is to the advantage of the honey producer to take every means in his power to educate the public and so encourage its consumption as an article of daily diet. A good way of doing this is to make displays of bees, honey, honey products, etc., at local flower and vegetable shows. The enclosed photograph is of a display the writer made a year or two since at an exhibition of this kind. The observation hive (seen on the left of the picture) never fails to attract the attention of a large number of visitors, and if the exhibitor is present he should take this opportunity to explain the habits of the bee, and in particular the virtues of honey as an article of food.

In this display there was approximately 220 pounds of honey, wax, mead, vinegar, cakes, etc., staged, and although the photograph does not render the color of the honey and wax accurately, it shows the manner in which it was arranged.

By putting up a first-class article in suitable receptacles, one is able to command the maximum price. Here in England for years past I have always been able to dispose of much more honey than I could produce at one shilling (25 cents) per pound jar of extracted, or section of comb honey.

Dartford, England.



HONEY EXHIBIT AT AN ENGLISH FLOWER SHOW Copyright

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Surplus Combs of Honey

About this time of year, every woman worthy of the name of beekeeper should be doing some planning as to how to do better for the coming season. There are beekeepers — both women and men—who can make no improvement in one direction, having for years made it a practice to save up an extra lot of brood-combs full of sealed honey, ready to be used in the fall or spring, wherever they will do the most good by being given to the bees. The probability is that the number of such is very small. Another small number make partial provision, leaving a large number with whom the season closes with never a pound of honey but what is in the brood-chambers of their hives.

With those who have large hives this does not matter so much, for in these the bees have enough room to store sufficient to last until they can again gather in the following season. Even then there may be advantage in having combs of honey for the following spring, for in most places the early honey is more salable than the late. Suppose we have a colony in a 10-frame hive with just enough honey to keep the bees from starving until the flow, say of white clover, begins, the next summer. But when that flow begins there will be empty cells enough to hold 10 pounds of honey or more, and those empty cells will first be filled by the bees before they do any storing in supers. If, now, we can give the bees two or three combs of dark honey saved from the previous fall to replace that many combs, they will commence just so much sooner storing in supers, giving us just so much more white surplus. In effect we have disposed of that dark honey at the price of light.

There is another reason for replacing empty combs in spring with combs of sealed honey. Whatever may be the reason for it, the bees seem a little chary of rearing a large amount of brood when no great amount of honey is present in the brood-chamber. But, as that very practical beekeeper, G. M. Doolittle, says, when there is an abundance of honey in the brood-chamber, the bees say, "There's millions at our house," and they proceed to rear brood on a lavish scale.

Some will say, "Well, if we are to feed, we may as well use sugar and gain the difference in price between sugar and honey. There are places where certain honeys are gathered in the fall that seem to be death to the bees in winter, and in such places sugar makes better food for winter. But such places are exceptional. Wherever good honey is to be had, sugar should find no place in the hive. Good authorities tell us that there are elements to be found in honey not to be found in sugar-fed bees. So it may easily be that the extra vigor of honey fed bees may enable them to do enough work at storing to more than make up for all that might be gained by feeding sugar.

These things all considered, therefore, let it be your earnest determination, if you have never done so before, to end the next season with a fair stock of filled combs ready to meet all emergencies.

DEEP BOTTOM FOR FEEDING.

At the close of the season last summer, as usual, we made the rounds of the hives to see that each colony had stores enough. We found the customary state of affairs, few colonies needing to have any help, nearly all colonies being supplied, and heavily supplied. Herein is a thing rather marvelous: the difference between conditions at the close of the season and a few weeks before. When the flow got to its heaviest the frames were crowded with brood, some of them so much so that not five pounds of honey were in the hive, if there was half that amount.

Looking at it the novice might say, "Why, this state of affairs won't do. When the flow stops there cannot possibly be enough honey in the hive for winter, and the bees must be fed heavily." Yet a little later the brood-nest is found containing little brood and much honey. How does it come? If the flow is the stimulus that keeps up breeding, why doesn't the queen continue laying just the same until the flow stops? Evidently she diminishes her laying, likely under the direction of the workers, sufficiently early to allow honey to be filled into the cells vacated by the emerging brood. Wise little creatures, the bees.

At any rate we found colonies well stored, as already said, and filled up any that were exceptions to the rule. Yet for some reason there is always a likelihood that when bees are taken into cellar a few colonies will be found not as heavy as desired. So when the two men carried the bees into the cellar—it was Dec. 4—they were told to mark any colony that seemed lighter than the others. There were half a dozen that they marked. It may be remarked in passing that judging the weight of a hive by its feel in carrying is not entirely reliable; still it serves some purpose.

What, now, would you think the best way to feed those marked colonies? We had the very best thing with which to feed them, sealed combs of honey, but to open a hive would unnecessarily disturb the bees, and moreover the hives were all piled up in the cellar, and it would be no small work to do all the lifting to get each one down from the pile. Well, this is what we did do. We thrust a comb of sealed honey into the entrance of each hive under the bottom-bars. It was a very easy thing to do, since the bottom-board was two inches deep.

It was surprising to see how rapidly the bees took possession of those heavy combs of honey, and in two days the honey was cleaned out from the lower as well as the upper side, and the combs left dry.

This is only one of the advantages of a deep bottom-board, and a minor one, since we do little feeding in the cellar, but it is a nice thing to be able to do it so easily the few times that we do want thus to feed. In the winter it is no small advantage to have an entrance two inches deep, so that there is no danger of its being clogged with dead bees, and to have that deep space under the bottom-bars so that the whole thing can be easily cleaned out any time, although it is not often that we take advantage of this latter item. The freer access of the air to all parts of the bottom-bars is no doubt an advantage.

In summer the deep space is a big aid to ventilation, and to that extent a preventive of swarming. A deep bottom-board is a good thing.

MISCELLANEOUS NEWS ITEMS

A Book for the Apple Grower.—The Lippincott series of Farm Manuals are very attractive books. "Productive Beekeeping," by Frank C. Pellett, is one of this series, which is intended to cover all branches of agricultural activity. The books are uniformly bound in attractive cloth covers, have colored frontispiece, and are printed on enameled paper that brings out the best effect of the many half-tone engravings with which they are illustrated.

We have just received a copy of "Productive Orcharding," by Fred C. Sears, of the Massachusetts Agricultural College. Fruit growing and beekeeping are coming to be so closely associated that we feel sure our readers will be glad to know of this book on the apple orchard. Of special interest is the following in regard to spraying while trees are in bloom:

"Avoid Spraying When Trees are in Bloom.—Another important point is the desirability of avoiding spraying while the trees are in bloom. Authorities differ as to just how serious a matter it is, but there seems to be considerable evidence to show that bees may be killed by such a spray. It is also probable that the pistils may be injured if the spraying is done just when they are in "full bloom." In any event there seems to be nothing gained by spraying when the trees are in full bloom, over spraying just after the petals fall. It is certainly worth while to avoid any chance of injuring either the bees or the blossoms."

The price of this book is $1.50, and it may be obtained from this office on receipt of price.

Our readers who raise poultry will also be interested in "Productive Poultry Husbandry," another of the Lippincott farm manuals by Harry R. Lewis, of the New Jersey College of Agriculture. It is uniformly bound with the others of the series, contains 535 pages

APIARY OF GEORGE M. THOMPSON, OF GRAND JUNCTION, IOWA and 320 illustrations. Price, $2.00. Any of these books can be had from this office.

This poultry book treats the subject very fully from every angle, from choosing a poultry farm, selecting stock and equipping the plant to marketing the product. It is the most complete single volume that has come to our attention. However, we were a little disappointed in not finding some reference to the special needs of water fowl, turkeys, etc. The volume deals entirely with chickens and with general principles. The book is well worthy of a place in every poultry fanciers' library.

◆

New York Advertising Contest.—We are getting many inquiries asking for particulars about our proposed postal card scheme having for its object the booming of honey as an article of food. Some want to know what ideas we want incorporated in the sketches, others what size these sketches should be, others again whether in colors or in black, whether photographs of apiaries are acceptable, etc. To all the inquiries we can only say, you must work this out yourself. We are more after the ideas than the artistic execution of them. One very good thing has been suggested to us. It is a label to nearly or entirely cover the top of a honey section as it stands in the shipping case, with following reading:

This section of Honey (14 oz.) equals
in food value

24 oz. of beefsteak	30c
or 30 oz. of codfish	40c
or 20 eggs	50c
or 11.2 oz. cream cheese	16c
or 2 quarts milk	16c

Comparative figures were taken from the American Bee Journal December, 1915.

One of our committee says: "This is the best thing brought to our notice, although not exactly in line with the postal-card scheme. We may recommend it also used in connection with photo of articles named, all put upon a postal card."

We hope to hear from others.

H. L. Case,
F. Greiner,
W. F. Marks,
Committee.

◆

Pennsylvania State Meeting. — We have just received an announcement of the Pennsylvania State beekeepers' meeting which is to be held at Lancaster on March 3 and 4. No program has as yet reached this office, but we presume it will appear in the Pennsylvania newspapers.

◆

Massachusetts Farmers Week at Amherst, Beginning March 13.—Besides the hour program of speaking and discussion, there are several special features offered during Farmers' week. In the wax laboratory there will be throughout the week a beeswax exhibition, showing the raw material, the process of rendering and the product procured. There will also be on exhibition a large display of beeswax from different parts of the world, and the materials made from it. On Tuesday at 10 a.m., in this laboratory there will be a demonstration of wax-rendering processes.

The Hampshire, Hampden, Franklin Beekeepers' Association will hold their annual meeting in the Apiary Building Thursday at 10 a.m. The business meeting will be brief, followed by an address by Mr. O. M. Smith, president, "Timely Suggestions to Beekeepers," and a discussion by Dr. Burton N. Gates on "Honey Packages, a Standard."

For the purpose of co-ordinating beekeeping work in the several counties of Massachusetts, there will be on Wednesday afternoon at 1:30, Room F, Entomology Building, a conference of county workers and agents. Essex county will be represented by Mr. Fred A. Smith, Director of the Independent Agricultural School of Essex county, where beekeeping forms a part of the instruction. Mr. Chas. H. White, Manager of the Worcester County Farm Bureau, will speak for the beekeeping interests of his county. This will be followed by a general discussion during which several other speakers will take part on subjects relating to county work.

What promises to be an exceedingly valuable contribution to the program is a symposium or round table for the discussion of "Spraying Practices *vs.* Beekeeping." This will be held in Room F, Entomology Building, Tuesday at 1:30 p.m. Each year beekeepers are taking more lively interest in protecting their colonies against what they have termed a wholesale slaughter resulting from the injudicious use of spray poisons. A corps of authorities, including government, State and municipal officials, will attend, to present the several aspects of this subject which will be attacked from the standpoint of the beekeeper, chemist, horticulturist, forest entomologist, and municipal forester. After the reading of the papers, there will be a discussion which should arouse considerable enthusiasm.

The Beekeeping Department of the College is prepared to make an elaborate display of equipment.

◆

Illinois Inspector's Report.—Bulletin No. 2, which includes the 4th and 5th annual reports of the Illinois State Bee Inspector may be had on request from A. L. Kildow, of Putnam, Ill.

Mr. Kildow requests the address of beekeepers in the southern part of the State who desire a visit from the inspector this season. He also issues a warning to beekeepers to guard against robbing as spring weather approaches.

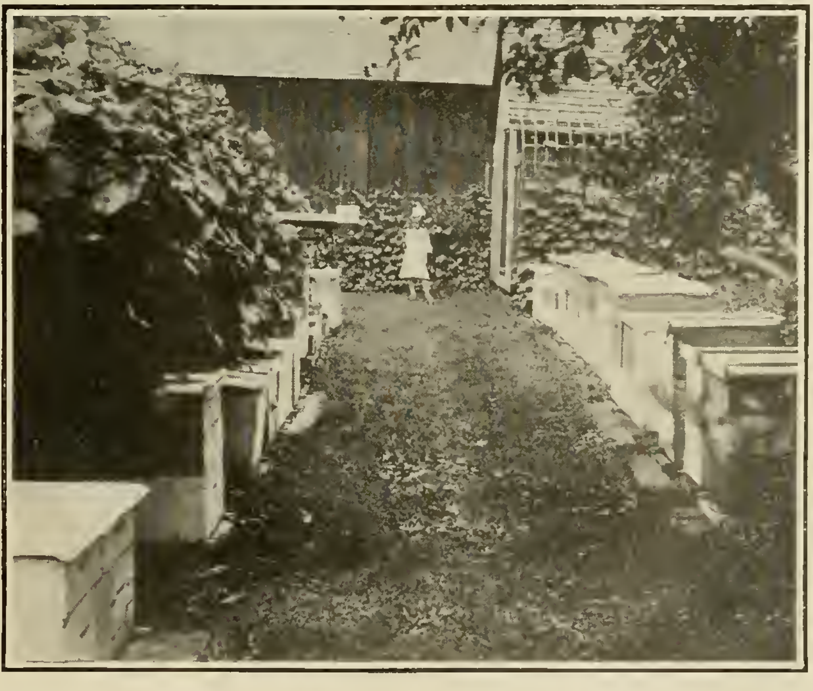
◆

Short Course in Bee Culture at Winona Lake, Ind.—There will be given a short course in bee-culture the week of March 20, at the Winona College of Agriculture, Winona Lake, Ind. The course is primarily intended for the amateur beekeepers, but I believe any one interested in bees will find it a week of profit. Any one interested should correspond with Dr. J. C. Breckenridge, president of Winona College of Agriculture, Winona Lake, Ind.

B. F. Kindig.

◆

The Columbus Meetings.—The fact that special sessions should be held for the consideration of problems relating to beekeeping in connection with the meeting of the American Association for the advancement of science is very encouraging. This annual gathering of scientists brings together the foremost men who are devoting their attention to scientific work, and many hundred are usually in attendance. For



J. W. TINSLEY'S TOWN LOT APIARY AT AMES, IOWA some time past there has been a section devoted to apiary inspection, and at the last meeting, at the suggestion of Morley Pettit, a session was also held to discuss the problems of the instructor in apiculture.

At these special sessions representatives of probably 15 or 20 States were present. Many of these men are directly responsible for the inspection work. Others connected with the department of entomology of a State or agricultural college, had an indirect interest. It is doubtful whether so many official representatives of the industry were ever before brought together.

Dr. Phillips presided at the session devoted to apiary inspection and made some interesting suggestions in his opening address. Lack of space, since we have so much convention material, forbids our going into detail as much as the importance of the occasion justifies. The consensus of opinion seemed to be that inspection work should be placed on a higher plane, and the service greatly improved. It was pointed out that in some States the work at present is not efficiently handled nor is there competent supervision.

The suggestion first made by N. E. France, at the inspectors' conference at Keokuk, Iowa, that there should be some plan of cooperation through the United States Bureau of Entomology, to the end that inspectors be promptly advised of the appearance of disease near their borders in other States, was approved. The action of the Keokuk conference in undertaking to work out a satisfactory plan was endorsed. The importance of uniform reports in the various States in order that comparisons of results might be possible, was brought out.

A number of interesting papers which we have not space to review were read. A paper by Dr. McCray concerning the difficulties of diagnosis of bee diseases emphasized the importance of fully trained men for inspectors. Dr. McCray has examined thousands of samples in the United States Department, and has had a wider general experience with the problems connected with diagnosis of the various brood diseases than perhaps any other living man.

Morley Pettit explained the system of inspection as practiced in Ontario, and a general discussion of the subject followed.

At the session devoted to problems in instruction, Morley Pettit presided. The interest in bee-culture is growing at a surprising rate and about a dozen new courses were announced. Among the States where some work in bee-culture is either being given or is planned we made note of the following: Alabama, California, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New York, Ohio, Pensylvania, South Carolina, Tennessee, Texas, Wisconsin, and the Canadian provinces of Ontario and New Brunswick.

Since the work is so new there are no precedents to be followed, and those who have the work in hand are feeling their way cautiously. A committee was appointed to outline a course which would be suitable for general use, in the hope that similar work could be given in all colleges where apiculture is taught. Arrangements for annual meetings were made.

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Some Eastern Bee-Meetings. — The writer recently had the pleasure of attending several of the meetings of beekeepers of the eastern States. The weather was rather unfavorable and conditions were such that visits to apiaries along the way were out of the question. It was a great pleasure to meet the eastern men and to learn something of their methods and outlook which differ in many respects from conditions in the West.

The first meeting attended was the Eastern Massachusetts Society of Beekeepers which met in Old South Building in Boston, Jan. 8. Within a stone's throw of the meeting place are historic spots closely associated with the stirring events of the days of our Nation's birth: Faneuil Hall, King's Chapel, Old South Meeting House, Boston Common, and many others. With but a few hours in Boston, there was little time for sight-seeing, but the genial secretary, Benjamin Sands, gave us a wonderful opportunity to make the most of the short time available. This society has held monthly meetings during the winter months, and holds summer field meetings also. In attendance and interest the meeting compared favorably with many annual meetings that the writer has attended in western States.

THE TINSLEY APIARY AT AMES, IOWA

Mr. Allen Latham, who is a well-known contributor to the bee journals, was the principal speaker of the day, and talked on "Building Up Nuclei into Full Colonies." A number of well-known persons were present and the discussions were lively. Jos. H. Chase, of Malden, Mass., who is 90 years of age, and who has kept bees continuously for 66 years, was in attendance.

At Worcester, in the evening, there was another good meeting when the Worcester county association held their regular monthly meeting. It is a little surprising to a man from the West to find so much interest in monthly meetings. However, the eastern men are not so widely scattered and do not find it necessary to travel such long distances as we of the West in order to get a sufficient number of people together for an interesting session. The question of securing legislation to prevent spraying while the trees are in full bloom was discussed at both these meetings, as there is much complaint on this score in Massachusetts.

The next stop was at the Agricultural College at Amherst. Dr. Gates has a most interesting museum of apicultural appliances in connection with his department. Of this we will have more to say in another article. At Amherst, the outside attendance was small, as the day was very stormy. A. W. Yates, the well-known inspector of Connecticut, was the only man from outside the State who came. Mr. Yates has been secured by the Agricultural College of Connecticut for a series of lectures on beekeeping to be given at the college during the spring months.

An all night ride made it possible to attend the meeting of the Ontario County, N. Y., Beekeepers' Association the following day. This was the 26th annual meeting of this county association and a strong program was carried out. In this section of New York commercial beekeeping is well developed and a number of those in attendance count their colonies by the hundreds. Mr. C. B. Howard, the newly elected president, has 1200 colonies. There was not a minute when discussion lagged or interest waned. Space will not permit a detailed mention of the various papers read or subjects discussed.

From Canandaigua to Guelph, Ont., one passes through the fruit belt and sees some wonderful orchards. In both Ontario and New York fruit growing is highly developed in certain localities and land values are very high. At Guelph the short course was in progress in charge of Morley Pettit. There was a very good class in attendance, mostly farmers who have but a small number of bees or beginners who intend to develop their apiaries. One encouraging sign was that some young men whose fathers are extensive beekeepers were present. When an extensive honey-producer sends his son to the short course it speaks well for the practical nature of the instruction. Prof. F. E. Millen, of the Michigan Agricultural College, was assisting Prof. Pettit as were some of the practical beemen of the Province. President Krouse, of the Ontario association, J. F. Dunn, of Ridgeway, and Jas. Armstrong, vice-president of the association, were among the number who gave lectures during the course.

Altogether it was a most interesting and enjoyable trip and did a westerner a lot of good to learn something of the way the East do things.

FRANK C. PELLETT.

A. W. Yates to Give a Course of Lectures on Beekeeping.—The trustees of the Connecticut Agricultural College have engaged A. W. Yates, of Hartford, to give a course of lectures on beekeeping accompanied by demonstrations. The lectures will be given on Saturdays during the months of April and May, and will be open to the attendance of students and others who may be interested in this subject. The topics of the lectures are as follows:

1. Establishing an apiary — natural history, hives and location, adaptability of the person.
2. Comb and wax—the mystery and origin of wax, its relation to honey, commercial value.
3. Spring management — the early necessity of a force of young bees to care for the queen, spring dwindling, stimulative feeding.
4. Diseases of bees—causes, how to detect, treat and prevent.
5. Increase and queen-rearing —the importance of good queens, easy methods of rearing and making increase.
6. Wintering—providing the colonies with sufficient stores in a compact brood-nest, packing, ventilation and feeding.

C. L. BEACH, *Pres.*

Notes from New York State Meeting.—Among the topics that came up for discussion at Syracuse Dec. 7 and 8, 1915, none seemed of greater importance than increasing the demand for honey.

The subject of advertising, thereby interesting the public in our product, had been assigned to a special committee at the 1914 meeting, and this publicity committee reported on the work done. The association voted that certain funds might be used by this committee. The committee favored the scheme of getting up postal cards with attractive cartoons pointing to the use of honey, such cards to be placed in the stores, beekeepers to be instrumental in the distribution. The committee was authorized to offer prizes for snappy, comic, captivating sketches suitable for this purpose.

It was emphasized by Mr. Geo. B. Howe that a proper label would attract the attention of the public, thus serving as an advertising medium. The colors of the label should harmonize with the color of the honey; blue was hardly considered admissible.

As to the wording on the label, the less of reading matter the better, the word "honey" most prominent. The general opinion was that it is not advisable to use either *extracted* or *pure* in connection with honey. We should have a well gotten up label and stick to it. It will become our trade mark. Mr. Howe uses a stamp in two colors on his section honey. Mr. Arthur C. Miller and Dr. Schamu prefer a small neat label, and say that a section of honey with such a label pasted on the top looks very tasty. Only honey of good quality should be put out under our label or trade mark.

Some previously accepted practices received a black eye in a quodlibet in which Mr. Arthur C. Miller summed up his experiences of years of beekeeping. He said: 1. It is cheaper for the honey producer to rear his own queens than to buy them; their cost is only 10 cents. 2. It is easier to introduce queens by the direct method (smoke method) than by any other. 3. One can produce as much chunk honey as extracted. 4. Requeening each year gives best results, insures greatest uniformity in yields. 5. Honey judiciously given away makes many sales. 6. The least fussing the least swarming. 7. Spring feeding pays when done six months in advance. 8. When feeding unripe honey the bees involuntarily produce wax, not so when feeding ripened honey (a fact of value when feeding back honey to have section honey finished up).

Mr. Miller explained his system of queen-rearing, exhibiting his small nucleus hive and the frame, which is larger than the Swarthmore. During the absence of a honey flow Mr. Miller feeds soft sugar in a little feeder hanging like the brood-frame on the rabbets of the hive; he does not advise to feed honey or even sugar syrup to small nucleus colonies. He rears his queens in third stories; a colony may thus rear queens all through the season; he uses the same wooden cell-cups season after season, grafts his larvæ into these after priming them. By dequeening a nucleus he obtains all the royal jelly needed for this purpose. A little wire nail driven into a stick serves for priming, and for transferring larvæ a toothpick or sliver of wood answers well.

Incidentally Mr. Miller mentioned that quite a saving could be made by using section foundation in the brood-chamber, saying that a sheet of section foundation cost much less than of brood-foundation; and by painting the sheets with melted wax after being secured in the brood-frames, sagging is prevented. The process is like putting a coat of cast-iron upon a base of wrought-iron. He also stated that honeydew is a welcome visitor with him. When abundant he has it stored in nucleus frames for which he has a special super constructed which holds a large number of them. When he gets them filled he preserves them for future use in the nuclei.

Mr. F. W. Lesser, of East Syracuse, gave a very interesting address on comb-honey production and controlling swarming. Said he formerly practiced the Doolittle method, but it did not give him best results. He preferred shaking swarms on a full set of frames with only starters, reducing or contracting after the third day to six Langstroth frames. The honey thus obtained was better, and more of it, expenses less. He summarized his method as follows: Clip all queens early, equalize brood, give set of empty comb on top to catch early undesirable honey. When clover flow is on give sections instead, baits if possible, put on shade-board and ventilate; visit each yard every week, make examinations by tipping hives back and look for queen-cells. He finds cutting out cells to prevent swarming useless. When necessary he shakes. Re-enforces shaken swarm with bees from old hive about two weeks later, taking about half of the bees, gives plenty of room when bees require it.

Mr. Byer, from Canada, talked about wintering bees in their cold clime' where —45 degrees Fahr. is not uncommon. Some years his bees are confined to the hive for five months; still he has wintered them well usually. A good queen is essential, he said, next plenty of good stores. Wants his hives just crammed with honey, provides no empty comb (winter nest). Lots of stores is the best asset to be turned into later; he uses winter cases, taking two hives each. No alighting-board should project where snow might collect and clog entrance. Packing is used on all sides except bottom, finds packing later unnecessary. A combination of leaves and sawdust is used generally and answers well.

The rendering of old comb into wax is very distasteful to the writer; it is a thing he has not yet learned to do successfully and profitably, and he had hoped at this meeting to be enlightened on the subject, but he has to acknowledge that he has brought nothing home that will be a help to him. Mr. Looks was not there, and his paper was read by the secretary. The writer urged to save all bits of comb and bur-combs, scrapings, etc., said that the heat ought not to be applied direct to the wax but to the water only.

From cappings practically all wax is easily obtained even by the simplest method—the solar machine doing good work, but with old comb it is a different proposition. Many beekeepers prefer to send their old combs to the professional wax makers and pay from 5 to 8 cents for the making of it, than do it themselves.

The question: What does it cost to produce a pound of honey? has often been asked. Arthur C. Miller attempted to answer it as follows: The two factors entering into the cost of any article are capital and labor. We may take a hive of bees, fixtures, appliances, comb foundation, etc., at $10. The interest thereon will be 6 percent; depreciation, 10 percent; labor, $1.00 per hive or 10 percent; insurance and taxes, 2½ percent; making a total of 27½ percent. This represents the cost of the crop, which, according to the United States census is 55 pounds. Therefore, the 55 pounds cost the producer $2.75 or 5 cents per pound.

[The writer does not know whether Mr. Miller took into account the buildings necessary, the wagons, horses, automobiles and other equipments, but believes that few professionals produce as low as he figures.]

Officers elected for the year are as follows: President, C. B. Howard, Geneva; Vice-President, S. D. House; Secretary-Treasurer, F. Greiner, Naples.

F. GREINER.

The Missouri Apicultural Society.—The Missouri meeting was held during Farmers' Week at Columbia, Jan. 4 and 5. Two large rooms in the Horticultural Building were allotted to the society. One of these was used as an assembly room, with display of literature and honey. The other contained models of hives and supers, all occupying one long table. On another table were the implements of the craft.

This being the first meeting since the granting of the charter, a constitution and by-laws were adopted. Treasurer J. F. Diemer, of Liberty, unable to be present, sent a short, spicy paper on "How I Began." E. B. Gladish, of Higginsville, also unable to appear, sent his brother, Mr. Charles Gladish. Mr. Gladish's subject, "What Hive Shall I Use?" led to a discussion which brought out the fact that beemen generally are discarding the 8-frame for the 10-frame hive with the Hoffman-Langstroth frame.

The society is most fortunate in coming at once into close relations with the Department of Horticulture of the State University. Dr. Leonard Haseman, associate professor of entomology, aided by an admirable working model of a bee, delivered a plain and very interesting lecture on "The Anatomy of the Bee." It was the kind of lecture that would entertain and instruct a gathering of farmers or of scientists—just the thing for a rural school.

But all the time there was a stream of visitors who demanded to be "shown." On the last day the program was entirely abandoned and Mr. Tyler, Prof. Haseman and Mr. Darby had their hands full, as they took class after class—a few individuals in each group, past the tables, explaining the nature and purpose of the hive, how and why it is constructed, answering questions on the manipulation and care of bees, elucidating the uses of the extractor and of the different implements to be seen on the tables, and doing a general promotion work. Young men were there who wished to make their farm incomes greater. Students from the university were there, attracted by what they had learned in their courses in entomology; women and girls were there who liked honey and were willing to help produce it. Some teachers and county superintendents were there, who manifested a ready sympathy in the thought that boys and girls might take blue ribbons at school fairs for honey just as well as for corn, poultry or puddings. The society gained a new outlook upon its opportunities, and the prospect is highly encouraging.

Officers were elected as follows: President, E. E. Tyler, Columbia; Vice-president, Emil F. Nebel, High Hill; Secretary, Austin D. Wolfe, Parkville; Treasurer, J. F. Diemei, Liberty.

The society plans to enlist the cooperation of the extension department and the home economics department of the university, and to inaugurate a campaign to popularize the production, consumption and sale of honey on the farms of Missouri. A. D. WOLFE, *Sec.*

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

One Clipped, All Clipped—Uniting, Superseding

1. I have read that where any queens in an apiary are clipped all should be. The writer added, "If you don't know why, try it and you will learn why." I would like to learn without trying. Can you tell why?

2. When colonies are weak in the spring, all having queens, would it work well to keep them separate, getting the increase of all the queens until just before the honey flow, then uniting to make strong colonies for the honey flow.

3. How do you determine when a queen is unprofitable and should be superseded?

INDIANA.

ANSWERS.—1. I think if any are clipped all should be, just because there's as much reason for clipping all as one. But I don't know any reason why it would not work all right to have only part clipped. At any rate I'd rather have three-fourths clipped than none.

2. Yes.

3. Settle it by the work of the colony. If the colony stores less than the average, the queen is a good candidate for supersedure. If it stores away beyond the average, the queen should be allowed to live as long as possible.

Honey Drink for Babies

Articles in the past in our bee journals say that sugar as a winter store leaves the bees in a dull, weak condition in spring, while good clover or basswood honey brings forth in spring bees full of life and activity. We have had several articles in the past two years on good honey as winter stores. If this is the case it would be well for all doctors to be encouraged to use honey as a baby drink, for if it acts on bees why not on the babies? NEW YORK.

ANSWER.—There might be some question as to the advisability of giving a daily allowance of sugar to a baby, but I think there can be no question as to the superiority of honey over sugar for that purpose. To be assimilated as food, the cane sugar must be inverted, and it is just possible, at least at times, that the inverting might put upon the tender baby organs too much of a burden, a burden that would be spared in the case of honey, whose sugar is already inverted. Then there are elements, iron, etc., contained in honey that are not found in sugar at all. Although in minute quantity, they are important, and whatever may be best in the case of the baby, there can be no doubt that children in general, and indeed grown-ups, would be better off, in some cases very greatly better off, if honey could replace at least a part of the more than 80 pounds of sugar now consumed as the average for every man, woman, and child in the United States. It is doubtful if the average physician is as well informed as he should be on this subject.

Using Comb Honey Supers for Extracting

How can I use the supers that honey has been taken out of by the bees? I want to work for extracted honey this summer.

CHICAGO.

ANSWER.—I should guess from your question that you have been producing section honey and want to change to extracted. You cannot well use the sections and their containers for extracting, but will have to use frames the same as in the brood-chamber or shallower. If I haven't guessed right, please ask again.

Traps—Why Not Used?

1. Does the Alley queen and drone trap catch the queen every time when she tries to get away with the swarm, and are the bees more irritated than when left to proceed naturally to the limb of a tree?

2. How do the bees act when a trap is used? Do they fly around and come back when the queen is not with them and cluster on the trap? What is the length and height of an Alley trap for a 10-frame hive?

3. What is the reason that beekeepers do not use them more, and there is nothing in the bee journals and papers about them?

ILLINOIS.

ANSWERS.—1. The trap retains the queen and the drones, but you will probably not notice that they are irritated by it.

2. The swarm will issue just the same as if there were no trap, and the bees may settle in a cluster just the same as if the queen were with them. As soon, however, as they discover the absence of the queen the bees will return to the hive. Often they will discover the absence of the queen while on the wing within a very few minutes of issuing, and sometimes not until they have remained hanging in a cluster several minutes. The trap may be of any size, only so it allows no bees to emerge except through the trap.

3. A chief reason why traps are not more used is because beekeepers so generally have their queens clipped and need no traps. Then, too, neither traps nor clipping will entirely prevent swarming, at least satisfactorily. If a trap be kept on, the bees will keep swarming and returning until a virgin is reared, and if the trap prevents the virgin from flying you will have a drone layer on your hands.

Cutting Out Cells When Piping is Heard—Will it Prevent Swarming?

When, in the evening, we hear queens piping, and next morning *every* queen-cell is cut out will said colony swarm? My contention is they will not. At our State beekeepers' meeting there were some who argued they would. WISCONSIN.

ANSWER.—When piping is heard in the evening, and cells are killed next morning without missing any, I have never heard of a case where swarming occurred. I think the plan may be relied on as well as almost any plan with such uncertain things as bees. But it is a plan I would hardly advise you to use, since you can get the bees themselves to kill the cells, and they are not in danger of missing cells. When the prime swarm is hived, set it on the old stand with the old hive close beside it. A week later move the old hive 10 feet or more away to a new stand, and all the field bees from the old hive when they return from foraging will join the swarm. That will so discourage the old colony that it will destroy all cells as soon as the first virgin emerges.

Italian Bees—Bottom-Board

1. Can you give a full description of the Italian bee?

2. I have a bottom-board that is reversible ⅜ inch on one side and ⅞ inch on the other. Can you tell me when to use each side?

3. In wintering bees out-of-doors, does the entrance have to be kept open or can I let the snow drift up and close it completely? Will they run out? IOWA.

ANSWERS.—1. If you examine Italians, as they come from Italy, you will find each worker has three yellow bands, the first band toward the head being often quite indistinct, the other two quite distinct. There are also Italians bred in this country with more than three yellow bands, those with five bands being called goldens.

2. If I undertand correctly, when the small side is up there is only ⅜ of an inch between bottom-bars and floor. That's too small a space at any time, and I would always use the larger side up.

3. So long as the snow remains dry and porous there is little or no danger from having it close the entrance. But if it becomes slushy and then freezes, there is danger it may smother the bees.

No Patent On the Dovetailed Hives

Is the dovetail hive patented or are the other hives patented? My object is this, I can make my own hives and it will save so much; then I would buy the sections. Is the Hoffman brood-frame patented? VIRGINIA.

ANSWER.—Langstroth took out a patent that covered all movable-frame hives. That patent expired years ago. There is no patent on the dovetailed hive. Indeed, there is nothing patented in the way of hives or fixtures that are in use generally. I doubt, however, whether one beekeeper in a hundred can afford to make his own hives. It's a very nice job to make a hive so that all parts are perfect, and the large manufacturers have everything convenient to make hives on a large scale, so they can sell them at a lower price than the average beekeeper can afford to make them for.

How Many Worker Bees for the First Flow?—Where to Put Frames of Foundation in Hive

1. As I understand, you experts tell us to treat our bees so as to have the most possible workers for the first flow; of course, in every way trying to obviate their forming the loafing habit or swarming fever, and here comes the January Beekeepers' Review, page 5, and says among other things that "We beekeepers think so much of our bees that we almost kill them with kindness," and that a colony with 20,000 workers is better for surplus honey than one with 35,000 workers.

2. If you put five frames of foundation in a body with five drawn combs do you put them together in the middle of the body or to one side, or do you alternate them with the combs? KENTUCKY.

ANSWERS.—1. Not having the article to which you refer, I do not know the connection in which it was said. But if it means that a colony in harvest-time with 20,000 workers will store more than one with 35,000, the bees being equally good in each case, then it is certainly an error. For every 20 pounds stored by the weaker colony I should expect not only 35 from the stronger, but more likely 50.

2. Something depends on circumstances. Usually I would put the drawn combs at one side and the foundation at the other.

Wintering a Nucleus

1. Is a two or three frame nucleus with a young queen more inclined to brood-rearing late in the fall than a full sized colony? I have wintered such nuclei in this locality out-of-doors, but they are usually short of stores in early spring, one having starved already this winter. I leave as much honey in each of their frames as the full colonies have in each of theirs. Is it because they must eat more to keep warm or do they use it in brood-rearing late in the fall? Should we leave more stores, comparatively, for the weak colonies than we do for the strong?

2. If we leave cells to hatch in nursery cages without candy and remove those hatched twice daily, will the lack of food this long injure the young queens?

3. If we have the nursery frame in a queenless colony will the bees feed young queens through the wire? I have reared a good many queens with no candy in cages. INDIANA.

ANSWERS.—1. I think such a nucleus is inclined to rear brood later than a full colony, although I hardly know why. Late rearing makes more winter stores necessary; and it is also true that a weak colony needs more stores proportionately than a strong one. If colony A is twice as strong as colony B, then colony B will use more than half the stores A will—possibly three-fourths as much.

2. Not much; perhaps not at all.

3. Queenless bees will feed such virgins, although there may be exceptions. I doubt if it was a good thing to receive queens with no candy.

Questions About Queens

1. What is the difference between a virgin queen and any other queen?

2. Which is the best to buy to introduce into colonies, untested or tested queen, and what difference is there?

3. Which are the best for gentleness, breeding and honey gathering, goldens or Italians?

4. Is it best to buy queen with pound packages of bees? What advantage is gained by buying pound packages without a queen?

5. What method would you take in introducing a new queen into a new or an old colony?

6. How can a beekeeper keep his bees from swarming about the first of June? WISCONSIN.

ANSWERS.—1. Every queen is a virgin from the time she is born until she meets a drone, which meeting occurs high in air outside the hive, generally when she is 5 to 10 days old

2. A young queen begins to lay when she is about 10 days old, more or less, and as soon as she begins to lay she may be sold as an untested queen. Three weeks after she begins to lay her worker progeny will begin to emerge, and if the markings of her young workers show that the queen has been purely mated, she may then be sold as a *tested* queen. Of course, the average tested queen is worth more than the average untested queen, but she must have a higher price. Some think it better, instead of buying a single tested queen to buy two or more untested ones.

3. There are good and bad in both kinds, but taken on the average most beekeepers prefer 3-banded Italians.

4. If you buy a pound of bees without a queen, you gain just so many bees, somewhere in the neighborhood of 5000. If you have all the bees you want, and merely want to make a change in queens, then it is better to buy the queen without one or more pounds of bees. If you want to increase your number of colonies, then it may be better to buy bees with the queen, especially as in the latter case you save the risk of introduction.

5. To tell all about introducing queens would make a longer story than there is room to tell here. If you buy a queen you are pretty certain to receive with her instructions for introducing, and like enough you will be told to kill the old queen and put in the hive the introducing cage containing the new queen, allowing the bees to eat out the candy that imprisons the queen, thus liberating her.

6. You can keep a colony from swarming by taking from it all its brood but one. Many prefer to let each colony swarm once only, and here's a good way to prevent all afterswarms when the colony swarms, set the swarm on the old stand and set the old hive close beside it; a week later move the old hive to a new stand 10 or more feet away. The bees will do the rest.

I advise you, *strongly*, to get a good beebook, such as Dadant's Langstroth.

Unfinished Sections

1. I have a number of sections left from last fall in all stages of completion I believed at that time they would be a big help for next season's crop, and that the bees would finish them into a first-class article. But I learn that such sections will not be of a good color and are apt to granulate sour. In order to use them up I would have to put eight or ten in each colony Would it be well to use them at that rate?

2. In my apiary of eight colonies I know that six of the queens are young ones. Will that fact tend to lessen the swarming impulse?

3. In buying queens would it be well to get them from different breeders rather than all from one breeder? My idea is that getting a variety might give more chances of finding the best strain for my locality, and when the best strain was found I could build from it in the future. NEW YORK.

ANSWERS.—1. Those that have no honey in them will work all right, provided they were not left on late enough in the fall for the bees to cover them with propolis. If badly varnished with bee-glue the bees may utterly refuse to use them. You will do well to let the bees rob out those that contain honey. If you set them out to be thus robbed without any precaution, the bees will be likely to tear the combs to pieces; so cover them up in such way as to leave entrance for only one bee at a time. Next time be sure that the bees empty them in the fall. It makes little matter how many you give to each colony to fill.

2. The age of the queens may or may not make a difference about their swarming. If it is a bad season for swarming they may all swarm alike; but if some of them fail to swarm it will more likely be the young ones. In other words, other things being equal, a young queen is not so likely to swarm as an old one.

3 Yes, getting from more than one source may increase your chances, unless you know in advance which was best.

Shifting Frames—Hoffman Frame—Good Yield

1. You say in "Fifty Years Among the Bees," in overhauling a hive the frames containing the brood are to maintain their original relative position. I use the 10-frame hive. If I start taking out frames from the side near me, say first, second, and third do not contain brood and fourth does, do I put in frame three (frame three belonging to the last frame that did not have brood), and then all frames containing brood, and then last the frames that do not have brood? In that case it would change the position, as it would put the brood two frames closer to one side.

2. Is the Hoffman frame good for comb honey, also for extracted? Do you know of a better hive?

3. If you were to start keeping bees what size hive would you buy for comb honey?

4. I use the 4¼x4¼x1⅞ two bee-way section Is this about the best section to use?

5. How do you hive a swarm that has a clipped queen?

6. I had 22 colonies last spring and increased to 42 extra good colonies by natural swarming, and had 3000 good sections of honey and 500 pounds of extracted. Do you think this a good yield? IOWA.

ANSWERS.—1. Changing the place of the brood in the hive does not necessarily change the position of the frames containing brood *relative to each other*. Suppose I am sitting at a hive, and 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 indicates the frames in the hive, No. 1 being the frame nearest me, and 3, 4, 5, 6, 7 (in

Italics) being the frames containing brood. That's where the brood may happen to be in a strong colony first time it is overhauled. When I return the frames to the hive they are likely to occupy this position: 1, 9, 10, 2, *3, 4, 5*, 6, 7, 8. Thus, although not a single brood occupies the same place in the hive as before, yet it occupies the same *relative* position. It is of some importance that 2 and 8 remain next to the frames containing brood, since they are likely to contain pollen, and at any rate that's the way the bees had it arranged. As to 1, 9, and 10, it doesn't matter about their order.

Some one may ask why I change the place of the brood at all. I want the brood-nest changed so that brood shall begin in the frame next to the outside frame farthest from me. Then the next time I overhaul I don't need to lift out all the frames to know how many contain brood, but after lifting out 1 and 9, if I find brood in 10 I needn't go any farther, for I know there is brood in all the rest except the outside one.

The rule to have the frames of brood maintain the same relative positions is not so iron-clad as to have no exceptions; but there must be some good reason for the exceptions.

2. There is no Hoffman hive, but the Hoffman frame is used in the dovetailed hive, which is as good as any for either comb or extracted honey unless it should be to have a hive still larger than the 10-frame dovetailed. The Hoffman frame was one originally with wooden shoulders on the end-bars for self-spacing; but it has been changed more than once, being now a frame with metal spacers. It is a good frame, and perhaps more in use than any other, its popularity being, however, due more I think to its being pushed by manufacturers than to its real merits. For my own use I prefer the Miller frame; although I do not think many others use it.

3. I don't know. Like enough the 10-frame dovetailed or something still larger.

4. It is more generally in use than any other section, and the fact that it is so in spite of the most strenuous efforts of manufacturers to push others ahead is pretty strong evidence that it is really the best section there is.

5. Watch for the queen as the swarm issues (she may be among the first or anywhere to the last), cage her, set the hive off the stand and put the empty hive in its place. By the time you have done this the swarm will begin returning, or it may be a quarter of an hour before it returns. When the bees begin entering the new hive, let the queen run in with them and the thing is done. It is the easiest way there is to hive a swarm, for it hives itself.

6. A "good yield" is a comparative affair. What is a good yield in one place may not be in another, and what is a good yield one year may not be so another. You averaged about 136 sections and 23 pounds of extracted honey for each colony, which would be equivalent to something like 170 pounds of extracted. This with 91 percent increase sounds good for almost any time and place.

Poor Queens

I have two queens out of the same brood of cells that mated so near the same time that I could not tell the date of either. There was, however, not more than three days difference, if any. The first of these I examined to see if she was mated, and the first thing I saw was sealed drone-brood. I was just in the act of killing her, when I saw sealed worker brood. Further examination showed that she had behaved in egg production very similar to a fertile worker. Some cells with several eggs, some none, hit and miss. Two or three cells looked as if she had dropped the eggs from the top of the cell, for they were scattered all the way down on one side and over the bottom of the cell. I closed this hive and moved to the one next to it, where I found another queen just as large, just as yellow, and I presume just as worthless as the other. Instead of killing I spared them to see what they would do in 1916. I was led to withhold judgment until I had ample proof of guilt, by an incident of 1882 I had a very yellow colony of bees to cast a swarm in September. There were several queens and I wanted to save them all, which I did. One with about a half gallon of bees settled to themselves. I hived them in empty combs. She laid so sparingly that I went to the hive the third time to kill her, but my nerve failed me. Her brood was so fine, and I, as cranky then as now, resolved to let her go over to see what she would do next year, as in this case.

The next year, to my great surprise, she proved to be the most prolific and best queen in the yard. According to the book I had been reading she ought to have been killed in '82, but kept for a breeder in '83. Remembrance of this incident induced me to keep the two bogus queens referred to.

ILLINOIS.

ANSWER.—It's a good bit like gambling to keep a queen of that kind, for while she *may* turn out to be a good queen the chances are against it.

Size of Hive

1. Do you think an 8-frame hive has enough room for a good queen?

2. Do you think you can get more comb and extracted honey with the 8-frame hive?

3. When you ship to a distant market do they return the shipping-cases? ILLINOIS.

ANSWERS.—1. No, there are times when some queens will keep a dozen frames well filled with brood. Not for very long, however. With such a queen you can get along very well by giving her a second story as soon as she needs it, and then reducing to one story as soon as the full harvest is on.

2. No.

3. No.

Bees in Florida

1. Do bees work the whole year in central Florida?

2. Is this State better for bees than more northern States; that is, does one get a larger flow of honey?

3. Are bees more susceptible to diseases in warm climate than cold? In looking through the Bee Journal I don't find a word about bees in Florida or any one advertising from that State. IOWA.

ANSWERS.—1. Yes and no. They may fly every week in the year, but there is much of the time when they do not work because there is nothing for them to do.

2. There are localities where fine crops of honey are secured, but on the whole no better than farther north.

3. I don't know; probably not much difference. Paralysis is much worse in the South, diarrhea in the North.

Divisible Brood-Chambers

I have always thought of trying the divisible brood-chamber hive, but there is one thing I do not understand about it. I once asked a beekeeper what he thought of it, and he answered that he considered it wrong in principle. I am unable to find anything wrong about it. It is said the small brood-chamber does not give sufficient room for the queen.

Now I absolutely failed to see why two half sized brood-chambers, one on top of the other, should not give the queen just as much room, unless it is meant that the horizontal division in the center acts as a fence or check to the queen, which she is unwilling to pass, and thus comfines her to one division. I have heard of apiarists in my own State, however, who use the divisible brood hive, and are said to be very successful. TEXAS.

ANSWER.—I am uncertain whether you want my opinion of the divisible brood chamber hive or as to the question whether a queen will go freely from one section or story of the hive to another, so it may be best to answer both. The hive with divisible brood chamber was introduced years ago by James Heddon, and pattented by him. He made me a present of the right to use the hive, but I never thought enough of the hive to make me believe it worth while to try it. Yet I know that good work can be done with a hive of that kind; I merely think that on the whole there is no special value in the divisible feature. Now as to the queen going back and forth—or up and down—across the bottom-bars of the upper frames and the top-bars of the lower frames; I have used the dovetailed hive with Langstroth frames in two strories, and the queen seemed to have no difficulty in going back and forth; at least she kept a brood nest going in each of the stories, and this in spite of the fact that my top-bars are much thicker than the top-bars generally used in divisible-chamber hives. I have thus used them many times. So I do not believe that this feature offers valid objections to the system.

Which Yields the Most Honey, White or Yellow Sweet Clover?—Stingless Bees

1. Does white sweet clover yield more honey than yellow sweet clover?

2. Will sweet clover grow in the shade?

3. Are stingless bees found this far north? INDIANA.

ANSWERS.—1. I don't know, but I don't suppose there is any material difference.

2. Yes, but if too much in the shade it will not yield much nectar.

3. No; they belong in the tropics.

Two Story Hives

1. Many beekeepers place a full depth super or hive-body on top of the brood-chamber, and place part of the brood-frames, which are filled with brood and covered with bees, in the top super. These frames taken from the brood-chamber are replaced by frames with full sheets of comb foundation. This method gives the bees a great deal of room, and they often have two bodies full of frames filled with brood by the time the clover crop comes. Now if the above is practiced, and the bees have both bodies full of brood at the time the clover comes, what is done with the hive-bodies, are they left this way and supers put on the two or are they separated?

2. If empty comb is saved by putting them in an empty hive-body and a good strong colony is put over these, can these combs be taken from the bees at any time we wish to use them?

3. If the queen should go down and lay in these combs, and they would be filled with brood at the time when a new swarm comes could these combs be given to the new swarm or what would you advise doing with them?

4. In using starters in sections, is it better to use a piece 3⅛ inch at the top and ⅝ at the bottom, or is there a better way to use starters? IOWA.

ANSWERS.—1. For extracted honey the two stories may be left or one may be taken away; for comb honey it is usual to reduce to one story.

2. Yes.

3. Yes, they can be given to a swarm, and generally it will be an advantage.

4. ⅝ is all right for the bottom, but 3¼ is better for the top.

EAT HONEY
NATURE'S OWN SWEET—AIDS DIGESTION

Over a million stickers like the above have been sent out in two years.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

FINEST Italian Queens. Send for booklet. Jay Smith, 1150 DeWolfe St., Vincennes, Ind.

PHELPS' Golden Italian Queens will please you.

TELL several thousand people what you have for sale with a few words in this department.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 70 Cortland St., New York City.

VIGOROUS Prolific Italian Queens, $1.00 each; 6 for $5.00. June 1st. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

NORTHERN BRED ITALIANS, "Nutmeg" strain Circular. A. W. Yates,
3 Chapman St., Hartford, Conn.

GOLDEN all-over Queens. Untested, $1.00. Tested, $3.00. Breeders, $5.00 and $10.
Robert Inghram, Sycamore, Pa.

PHELPS' Golden Italian Bees are hustlers

QUEENS FROM THE PENN CO. See our large ad. elsewhere in this Journal.

WILL TRADE fine, young Italian queens for first-class brood-combs, wired, in Hoffman frames. C. S Engle, Beeville, Texas.

FOR SALE—Leather-colored Italian bees by pound. Queens and nuclei a specialty. Write to C. H. Cobb, Belleville, Ark.

ITALIAN QUEENS and early shipments of bees by the pound from Texas. Write us for prices. R. V. & M. C. Stearns, Brady, Tex.

ITALIAN QUEENS that produce hustlers. Nuclei and pound packages.
A. E. Crandall & Son, Berlin, Conn.

FOR SALE—100 colonies of bees in 8-frame Langstroth hives. Located at Dancy, Ala.
Chas. C. Schneider,
2305 Gratiot Ave., Detroit, Mich.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

INDIANOLA APIARY offers bees and queens for sale. Untested, 75c. Tested, $1.25. Bees in 1-lb. packages, $1.00; 1-frame nucleus, $1 25. Add price of queen if wanted.
J. Warren Sherman, Valdosta, Ga.

FOR SALE—Bright Italian queens at 75 cts. each; $7.50 per dozen or $60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons, Boyd, Ky.

FOR SALE—Tested Italian Queens for $1.00 each. In order to make room for cells in the early spring, we are offering these young tested queens for the above price, if taken by April the 15th. They were reared late last fall and are large beautiful queens. We guarantee them to give satisfaction.
M. C Berry & Co., Hayneville, Ala.

FOR SALE—Three-banded Italian queens. Nuclei a specialty. Bees by the pound. My stock will please you as it has others. Let me book your order for spring delivery. Write for circular and price list.
J. L. Leath, Corinth, Miss.

AN established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

THREE-BANDED ITALIANS ready May and June, $1 00 each; 6 for $5.00; 12 for $9.00; after June, 75c each; 6 for $4.25; 12 for $8.00. For larger lots write Curd Walker, Jellico, Tenn.

FOR SALE—Golden Italian Queens and Nuclei about June 1st. Send for price list.
J. I. Danielson, Fairfield, Iowa,

BEES by the pound a specialty. Swarms of young bees shipped anywhere in the U. S. or Canada and safe arrival and satisfaction are guaranteed. Largest shippers in the South. Capacity 100-lb. swarms a day. Write for free circular and price list.
M. C. Berry & Co., Hayneville, Ala.

QUEENS from my honey-gathering strains will be ready to ship April 1st. In honey-getting qualities they have few equals. See my advertisement elsewhere in this Journal. D. E. Brothers, Attalla, Ala.

FOR SALE—Golden Italian queens about the first of May. Untested, 70c; $8 00 dozen. Select untested, 80c; $9.00a doz. Tested,$,100. Select tested, $1 25. No foulbrood in my apiary. D. T. Gaster, Rt. 2, Randleman, N. C.

FOR SALE—Northern-bred Italian queens. Untested, $1.00. Sel. tested, $1 50 Bees by lb. Some best plans for beginners, "How to Introduce Queens and Increase," 25c. List free. E. E. Mott, Glenwood, Mich

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GOLDENS—California Goldens, 60c each. Alameda Apiaries, W. A. Barstow, Breeder, 1042 Alameda Ave., West San Jose. Calif.

HAVING secured breeders of Dr. Miller, we are offering daughters of his famous strain of Italians at the low price of $1.50 each. Queens of our own strain at 75c each. One pound bees, $1.50; 2-frame nuclei, $2.25. Full colony in 8-frame hive at $6.50; 10-frame, $7.50; 200 colonies for spring delivery at $6.00 each, 10-fr. hives. The Stover Apiaries,
Mayhew, Miss.

FOR SALE—Good Italian queens, untested, 75c; tested, $1.00; nuclei, 2-frame, $3.00; 1-lb. package, $2.00; 2-lb. package, $3 00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1904 Park Ave., Little Rock, Ark.

FOR SALE—Bright Italian queens this season, 75c each; $8 00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

UNTESTED QUEENS of my business bees, $1.00 each—great honey getters, gentle. Ready March 1st. Disease unknown here. Write me and I will tell you how to make money buying my queens. Fully guaranteed
M. F. Perry, Bradentown, Fla.

GOLDEN and 3-banded Italian and Carniolan queens, ready to ship after April 1st. Tested, $1.00; 3 to 6, 95c each; 6 to 12 or more, 90c each. Untested, 75c each; 3 to 6, 70c each; 6 or more, 65c. Bees, per lb., $1.50; Nuclei, per frame, $1.50. C. B. Bankston,
Buffalo, Leon Co., Tex.

BEES AND QUEENS—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey gatherers. We breed this stock only. Untested queens 75c each; $8.00 per dozen; $60 per hundred. Tested queens, $1.25 each; $12 per dozen; $85 per hundred. Three frame nuclei, $2 25 each; $200 per hundred. Bees ½-lb. pkgs., 75c each; $60 per hundred; 1 lb. pkgs., $1 00 each, $85 per hundred. Add price of queens to above pkgs. Complete catalog free on application. Spencer Apiaries Co.,
Nordhoff, Calif.

ITALIAN QUEENS, prompt service; queens mailed to purchaser in new style of introducing cage that is safe and sure. Bees from a one-frame nucleus to a carload. Write for price list on colonies, queens and nuclei J. F. Diemer, Rt 3, Liberty, Mo

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IF YOU wish to get early queens and combless packages place your orders early with the Marchant Bros., Sumatra, Fla. After March 15th our address will be Fitzpatrick, Ala. See our ad elsewhere in this Journal.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

QUEENS—EARLY QUEENS, GOLDEN OR LEATHER-COLORED ITALIANS, one select untested, $1.00; 6, $4 25; 12, $8.00. Tested, $1.25. Best breeder, $5.00. EARLY SWARMS OF YOUNG BEES in light screen cage a specialty. One 1-lb. package, $1 25; one 2-lb., $2.25, queen extra. For ten or more write for price; also nuclei and full colonies. Orders booked now for bees and queens, both ready for delivery March 15 and after. Safe arrival, prompt service and satisfaction guaranteed. Circular free. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

CARNIOLAN, Golden and Three-Banded Italian queens from April to October. Tested, $1 00 each; 6, $5 40; 12, $10 20. Select tested $1.25 each; 12, $13.80. Untested, 75c each; 6, $4.20; 12, $7.80. Select untested, 85c each; 6 $4.80; 12, $9.00 Breeders, $3 00 to $5.00, Virgins, 50c each; 6, $2.50; 12, $4 00. Bees, 1-lb., $1.25; 2 lbs. $2.25; ½ lb., 75c. Nuclei, 1 frame, $1 25; 2 frames, $2.25; 3 fr., $3 00. Full colonies with tested queens, 8 fr., $6.50; 10 frame, $7.00. No disease, safe delivery and satisfaction guaranteed. Money must accompany the order. Write for price list.
I. N. Bankston, Buffalo, Tex.

HONEY AND BEESWAX

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

BEST flavor alfalfa sweet clover honey at a very reasonable price. Ask for delivered price on 2 60-lb. cans or more
Wesley Foster, Boulder, Colo.

FOR SALE—Honey-Dew Honey (for baking or bee food), 5c by case; 10 cases, 4½c; 25 cases, 4c per pound; 2 60-lb. cans to case; also some fall comb honey, $2 50 per case of 24 sections. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Extra good light amber mesquite and alfalfa honey. Two 60-pound cans to case, 5c a pound; 5 and 10 pound friction-top pails, 8c per pound per hundred weight. Cash with order on board of cars here.
B. A. Hadsell, Buckeye, Ariz.

FOR SALE—Car honey, half extra fine comb, half extracted, alfalfa, or car extracted. Small lots at $8 00 per case of two 5 gal. cans; case of six. 10 lb. pails. $5.00; 12, 5 lb. pails, $5.40. All f. o. b. here.
E. F. Atwater Co., Meridian, Idaho.

FOR SALE—10,000 pounds amber honey in 60-lb. cans or friction-top pails. Best quality; prices right; sample.
E. S. Miller, Valparaiso, Ind,

FOR SALE—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

FOR SALE

FOR SALE—Friction-top pails, 5-lb. size, per 100, $4 50; 500, $21.25; 10-lb. size per 100, $6.25; 500, $30. Low prices on other sizes in bulk. Also furnished in re-shipping cases. Shipped from Chicago.
A. G. Woodman Co., Grand Rapids, Mich.

For Sale—200 colonies of bees, 5 acres of land. N. L. Anderson, Spearfish, S. Dak.

For Sale or to let on shares 250 well kept colonies, in irrigated alfalfa region (Kansas); season 1914 averaged 110 pounds. Address, C. O. Davison, Presby. Hosp., Pittsburg, Pa.

For Sale—Select bred three-banded Italian queens and bees. After 20 years of select breeding we have a strain of bees that for hustle, hardiness and honey gathering qualities are unexcelled. Write for free circular and price list. M. C. Berry & Co., Hayneville, Ala.

For Sale—170 colonies of bees equipped for extracting in 2 apiaries one mile apart, in an alfalfa belt three miles from Fallon, Nev., in the heart of the Carson-Truckee U. S. Government Reclamation project. For particulars, address Gillman H. Wright, R. F D. No 1, Fallon, Nev.

For Sale—173 acres in Musselshell Co., Mont., 80 acres river bottom, house, barn, ice house, hen house, honey house, garage, hog house, and tool house. All new frame buildings, fenced, 50 acres in alfalfa $5000, $4000 cash, balance on time. Apiary of 50 colonies, and all equipment for conducting an up-to-date apiary. Will sell apiary at your own price, if taken with farm. One mile from town and R. R. depot. Address, Meadow Glen Apiary, Carpenter Creek, Mont

For Sale—35 colonies pure Italian bees with select tested queens of J. P. Moore strain, $4.50 per colony; 35 colonies with mismated queens from same strain, $4 00 per col.; 35 cols. light colored hybrids from the same strain with queens, $3.50 per col., all in 8-frame bodies in good winter cases, mostly the Quinby standard, full depth self-spacing Hoffman frames, 8 to each hive, all combs straight, and all strong and healthy with plenty of honey, f. o. b. here.
Wilmer Clarke, Box 200, Earlville, Weed Co., N. Y.

SITUATIONS.

Wanted—A young man to help with bees and garden. A chance to learn queen-rearing. A. V. Small, 2302 Agency Road, St. Joseph, Mo.

Wanted—Industrious man of good habits to help care for apiary and fruit farm for 1916. Salary, share or will sell—75 colonies T. K, Rea, Pottsville, Tex.

Wanted—A position to work with fruit, garden or farm work Will help with bees. Age 18. Paul Coyner, Merom, Ind.

Lady of 32 wants to learn apiculture and help with poultry. Services for board. Musician, good companion for old couple or children. References exchanged.
Address, Miss M., care Am Bee Journal.

HONEY LABELS

Honey Labels that create a favorable Impression on the buyer. Dealers admire them and give them prominence. Catalog Free. Liberty Pub. Co., Sta. D, Box 4H. Cleveland, O.

SUPPLIES.

Hoffman self spacing frames in flat, 100. $3.00; 500, $13 75; 10 0, $27.
Sivelevetts Frame Works, Whitneyville, Ct.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

Do You want the best foundation fastener? Then buy "The Pangburn," mfg. by W. S. Pangburn, Center Junction, Iowa.

Comb Foundation—You can have your beeswax made into best quality foundation. Also the wax from old combs or "slumgum." We get it all out. On shares or very cheap for cash; new factory; old liberal terms; cheapest and handiest transportation for all northern beekeepers. You always get your own wax back. J. J. Angus, 434 Fulton St, Grand Haven, Mich.

Good second hand 60-pound cans, 25c per case of two cans f. o b. Cincinnati; terms cash. C. H. W. Weber & Co., Cincinnati, O

Beekeepers' Supplies sold at a reduction. New prices now ready. Send for list free. W. D. Soper, Jackson, Mich.

Notice—Beekeepers when in need of supplies write us for prices We can save you money. We make a specialty of odd sized hives. The M. C. Silsbee Co., Cohocton, Rt. 3, N. Y.

MISCELLANEOUS

For Sale—Barnes' saw, heavy iron frame 1¼ inch maple top, complete; $10 a bargain' M. D. Smith, Preston, Iowa.

For Sale—Two fr. No. 5 Novice Root's extractor, wax press and uncapping can, both new. Joe Nafziger, Goodland, Ind.

For Sale — California little suburban farms, suitable for poultry, fruit and garden. Terms, write E. R. Waite, Shawnee, Okla.

A Little ad in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

For Sale—Use cuts in advertising your queens, honey or bees. We are prepared to furnish cuts for use in beekeepers' advertising at low rates. Let us quote prices on what you need. American Bee Journal, Hamilton, Ill.

For Sale—A fine farm in Florida, 10 or 20 acres, 2 acre orange grove, also apiary. Fifteen minutes walk from railroad depot. Write for particulars Chas. Mack, Mannville, Putnam Co., Fla.

For Sale—A good bee location; 40 acres with good house and barn; also 30 colonies of bees with fixtures. Located in the central part of Wisconsin. For further information write to Geo. Delano, Royalton, Waupaca Co., Wis.

Wanted—100 drawn brood combs, Hoffman frames, well wired, not too old, and free from disease. Quote your lowest price. Willis N. Zeitler, Philipsburg, Pa.

Free for Six Months—My Special offer to introduce my magazine, "Investing for Profit." It is worth $10 a copy to any one who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how any one, no matter how poor, CAN acquire riches. Investing for Profit is the only progressive financial journal published. It shows how $100 grows to $2200 Write NOW and I'll send it six months free. H. L. Barber, 546-20 W. Jackson Blvd., Chicago, Ill.

POULTRY

If You breed fancy poultry, offer your surplus stock or eggs for sale in our classified columns.

White Leghorns that lay Barron strain Eggs for hatching from high record hens· Will exchange eggs for nuclei of bees. Sidney Johnson, Boydton, Va.

Rhode Island Reds—Both Combs. High grade; carefully bred; none better. Prices reasonable. Stock and eggs, by setting or hundred lots. Mating list free. Fred Oertel, Box 24, Brighton, Ill.

Poultry Paper, 44-124 page periodical, up to date, tells all you want to know about care and management of poultry, for pleasure or profit; four months for 10 cents. Poultry Advocate, Dept. 230, Syracuse, N. Y.

HONEY AND BEESWAX

Chicago, Feb. 16.—During the last few days there has been more movement in honey than for some weeks past, which, of course, is usual at this time of the year; prices, however, are weak. Best grades of white comb honey are selling at about 15c per pound with the amber and off colors at from 1c to 3c per pound less. Extracted white at 7@8c per pound, according to the kind and quality. Amber grades range at from 6@7c per pound. Beeswax steady at 30c per pound, R. A. Burnett & Co.

Kansas City, Mo., Feb. 18.—The supply of comb honey is not large and the demand is light. The supply of extracted is large and the demand very light. The market is really overstocked. We quote as follows: No. 1 white comb, 24 sections per case, $3.00. No. 2 white comb, $2 75. No. 1 amber, $2 75 to $3 00. No. 2, $2 50 to $2.75. No. 1, white extracted, per pound, 7½@8c; amber, 6@7c. No. 1 beeswax, per pound, 28c; No 2 25c.
C. C. Clemons Produce Company.

Denver, Feb. 19.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: Fancy white, per case of 24 sections, $3 15; No. 1, per case, $2.93; No. 2, per case, $2.70. White extracted, per pound, 8½@8¾c; light amber, 8@8¼c; amber, 7@8c. We pay 25c per pound in cash and 27c per pound in trade for clean yellow beeswax delivered to us here at Denver.
The Colo. Honey-Producers' Ass'n.
Frank Rauchfuss, *Mgr.*

Los Angeles, Feb. 18.—Extracted honey, water-white sage, 7½c; white sage, 7c; light amber sage, 6½c; light amber alfalfa, 4¾c, in carload lots f. o. b. Coast. Comb honey, fancy white, $2.75 per case. Stocks of all kinds of honey are fairly well cleaned up.
Hamilton & Menderson.

Cincinnati, Feb. 17.—Very little honey selling at present. We quote No. 1 comb at $3.75 to $4.00; No. 2 at $3.50 to $3.75. White clover extracted in cans, 7@9c; amber in barrels, 5½@7c, according to quantity and quality. For choice bright yellow beeswax we are paying 28c a pound delivered.
The Fred W. Muth Co.

New York, Feb. 18.—The market on comb honey is practically at a standstill at present, and of late the demand has been next to nothing, there being some little demand, however, for 1-pound and fancy white, but there is no demand for off grades whatever. Our stock is not heavy, but it is more than sufficient to fill the present demand. We have letters coming in right along from producers asking what we can get for comb honey, and we write them that the season is practically over, we would not feel justified in stocking up.

As to extracted, the market is in pretty good shape with a fair demand. There seems to be plenty of supply of all kinds, with the possible exception of California water-white sage, but we would not encourage shipments without first writing us.

We quote nominal: California, 6½@8c, according to quality; clover and basswood, 7½@8c; off grades, amber and light amber, 6½@7c; buckwheat, 6@6½c; West Indian, 55@65c per gallon, according to quality.

Beeswax is in fair demand from 29@30c.
Hildreth & Segelken.

Productive Bee-Keeping—The best methods for producing honey, under the greatest variety of conditions, have been studied, sifted and excellently arranged in this thorough, scientific, yet practical volume by Frank C. Pellett, Iowa State Apiarist. From the first page to the last bee-keeping is treated as a business, or as a money-making side line in which almost every farmer should engage. There is a chapter on wax as a by-product, a chapter upon marketing the honey, with twentieth century information upon advertising. Diseases and methods of prevention and care are given a chapter that probably will mean big money saved for every bee-man. There are 134 illustrations and 316 pages. It is a splendid work. Price, $1.50 net, or with the American Bee Journal, one year, only $2.00.

Notice to Northern Beekeepers!

WE are making a specialty of the pound package trade, and will ship from our yards at Fitzpatrick and other points in Alabama, packages and queens during April and May at the following prices: One pound with queen, $2 00; without queen, $1 25. Two pounds with queen, $2.00; without queen, $2 15. Three pounds with queen, $3 80; without queen, $3.00. Untested queens, single, $1.00; six for $4.50; dozen for $8.50; in lots of 50 or more, 60c each. Select tested, $2 00. Breeders, $3.50. A special price quoted on packages of 50 or more and 5 percent discount on all orders by March 15th. We have improved on pound package, making it larger, lighter and giving more ventilation.

Our vast experience with the Root Company, and our father, A. B. Marchant, enables us to know what the trade wants and needs, and we are well equipped to take care of any and all orders regardless of size. Our aim is to carry surplus so as to be enabled to fill all orders by return mail and on the day they fall due. Our stock is of the three-band Italian, and has stood the test for 20 years. **There is none better.** We have sold the A. I. Root Company two cars of bees and several hundred queens, and will sell again this season.

We guarantee safe arrival, freedom from disease, pure mating, no inbreeding, and your money refunded if not satisfied.

References: The American Exchange Bank of Apalachicola, Fla.; also The A. I. Root Company. Insure yourself against loss by placing your orders with

The Marchant Bros., - Sumatra, Florida

AFTER MARCH 15, OUR ADDRESS WILL BE FITZPATRICK, ALABAMA

Bee book free

YOUR SUCCESS IN BEEKEEPING DEPENDS ON THE KIND OF BEES YOU KEEP AND HOW YOU HANDLE THEM

Blanke's 68 page book is not merely a catalog; it is an authoritative expert guide on the kind of apiary supplies that successful beekeepers have proved to be **profitable** in actual **use.** Blanke carries the largest stock of bee supplies west of the Mississippi, and can make prompt delivery. Every article carried is perfect fitting. Whether you're a beginner or an expert beekeeper you ought to get the Blanke Bee Book—send for it today.

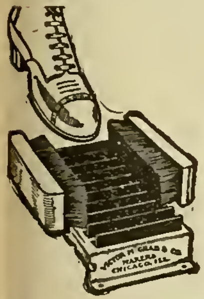
Fine Poultry Book Also Free

If you keep poultry, too, ask us for illustrated poultry book; full of valuable pointers on poultry raising, as well as a catalog of profitable poultry supplies.

BLANKE MFG. & SUPPLY CO., PIONEERS IN BEE, POULTRY, AND DAIRY SUPPLIES, 209 WASHINGTON, AVE., ST. LOUIS, MO.

AN AUTOMATIC FOOT SCRAPER

Give Your Wife a Surprise


GRAB & CO. MAKERS CHICAGO, ILL.

When a fellow comes in from the barn on one of those wet days when most of the farm sticks to his shoes, it is almost impossible to get them clean with an ordinary scraper. Surprise your wife by placing an **Automatic Foot Scraper** at the back door. Mud, snow, dust and dirt will not be tracked over your floors if you use

GRAB'S FOOT SCRAPER

outside your door. The only device made which cleans bottoms and sides of shoe in one operation. Has ten parallel plates for scraping soles and two stiff bristle brushes which cleans sides of shoe.

AUTOMATICALLY ADJUSTS ITSELF

to any size shoe. Handsomely enameled. Looks neat. Can be rotated and swept under. Fastens to doorstep or any handy place Get one and save yourself useless work. **Price, $1.00.**

We offer the Bee Journal one year with foot scraper; both only $1.50

AMERICAN BEE JOURNAL, HAMILTON, ILLINOIS

SUPPLY YOUR Customers

With fine Alfalfa, Clover or Amber Fall Honey

We can supply you in packages to suit your trade. Any Quantity.

Also a limited amount of nice comb honey for sale. *Write us now.*

DADANT & SONS
Hamilton, Ill.

ITALIAN QUEENS

THREE-BANDED

Ready April 1, of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey gatherers. Untested, $1.00; 3, $2 75; 6, $5.00; 12, $9 00. Tested, $1.25; 6, $6.50; 12, $12.50. Send for my free circular and price list, and see the natural conditions under which my queens are reared. Will book orders now.

JOHN G. MILLER
723 C Street, Corpus Christi, Texas

BEE SUPPLIES

of all kinds; low prices. Discount for early orders. Catalog free.

J. W. ROUSE, Mexico, Missouri

WE ARE READY

To figure on your wants. Send us a list of goods and we shall be pleased to quote you the very lowest price for the best goods. Established 1899. Our catalog may interest you.

H. S. DUBY & SON, St. Anne, Ill

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

OUR TEXAS BEES

Having locations where I can rear bees almost the year around. I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, $1.50; 2-pound packages, $2.50; 10-pound lots, $13; 100 pounds for $120. Queens shipped with pound packages at 75 cents each. By mail at $9.00 per dozen. Special prices to dealers in large lots.

WM. ATCHLEY, Mathis, Texas
"The Texas Beeman"

Scientific Queen Rearing.—This is practically the only complete book on queen rearing now in print. It is looked upon by many as the foundation of modern methods of rearing queens in a wholesale way. G. M. Doolittle, its author, has an entertaining way of writing on bee subjects which helps his readers to follow him with pleasure even if they never intend to rear queens at all. He describes just how the best queen can be reared in nature's way. Cloth bound, 124 pages, 75 cents, postpaid. There is also a leatherette-bound edition of the same book which retails at 50 cents, or with the American Bee Journal, both for $1.00.

Secure These Rare Plants—Free

The wonderful Progressive Everbearing Strawberry Plants are becoming immensely popular. No wonder! You set them out in May and enjoy fine berries during the following summer and fall. No long wait for this crop!

Progressive Everbearing Strawberries take the risk out of Strawberry growing, too. The plants are much hardier than the common varieties. Ordinary spring frosts will not hurt them. Even if a heavy freeze does kill the early spring bloom, in 30 days they will bloom again.

Through a special contract with a grower of National reputation, The Farming Business is able to furnish to you **FREE,** these wonderful

Progressive Everbearing Strawberry Plants

or, if you prefer, Fall-bearing Strawberry Seeds—the true hybridized sort, and also plants of the ever-popular Chesapeake variety. All strains are pure. The Progressive plants will actually grow and fruit as described. A test patch of a square rod was set in May, 1914. Just 83 days after, the owner began gathering a fine crop, which continued till late October, aggregating 74¾ quarts. The great Chesapeake variety needs no introduction. The Fall-bearing Seeds afford a most interesting way to grow Strawberries.

These plants and seeds are scarce this year, and prices will be high, where they are obtainable at all. Act now and insure yours.

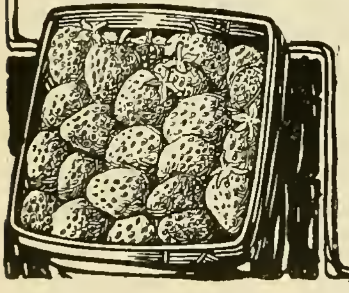
Our Plan

No. 1—Send $1 (stamps accepted) for The Farming Business—one year—52 big issues—and we will send in addition 12 healthy Progressive Everbearing Strawberry Plants, this spring just at the right time to set. Postage prepaid.

No. 2—Send one yearly subscription to The Farming Business together with $1 (stamps accepted), and in addition to the paper we will mail you one packet of true hybridized Fall-bearing Strawberry Seeds. This will give you about 500 plants.

No. 3—Send $2 (stamps accepted) for The Farming Business—2 years, 104 big issues—and we will send in addition 12 Progressive plants and also 25 plants of the popular Chesapeake variety.

You need the Farming Business in your home. It is practical, helpful, progressive, cheery. A great paper for the busy farmer and the entire family. The Vegetable Growers Magazine Section alone is worth the subscription price. It will pay you to accept one of our liberal offers. If already a subscriber your paper will be continued for an extra year—or two. Accept **today** to make sure of your **free** berry plants or seeds.



The Farming Business
Dept. **Q**
500 N. Dearborn Street Chicago, Ill.

REPRINT OF OLD 1853 EDITION OF

Langstroth on the Hive and Honey Bee

This book is very interesting when read in connection with the Revised Langstroth. Many are surprised at the number of devices mentioned by Langstroth years ago, which are re-written as new today. We offer the old reprint at a special postpaid price of $1.00.

Reprint of Langstroth, $1.00 }
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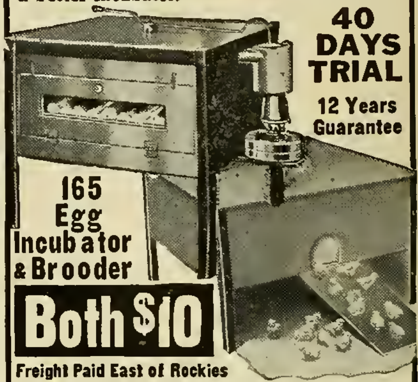
Reprint of Langstroth, $1.00 }
American Bee Journal, $1.00 } Both for **$1.50**

All three above for $2.50

American Bee Journal, Hamilton, Illinois.

NATIONAL Gets Big Hatches

Peter Kilpatrick, Nazereth, Pa., writes "Have made better hatches than anyone here." Strongest, most durable Incubator made. Hot water heat—double wall—dead air space—asbestos lining—self regulator—metal cover. Will not warp or shrink. **Money cannot buy a better Incubator.**



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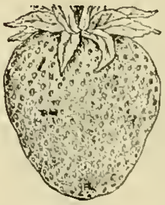
Why pay more? A bigger, better, simpler machine at no increase in price. A proven cold weather hatcher. Built on U. S. Gov't. specifications. Write today sure for Free Catalog, or order direct from this ad and save time. You take no risk. Satisfaction guaranteed or money refunded. Comes set up ready to run, with egg tester and book of instructions. Don't delay. Get the facts at once.

NATIONAL INCUBATOR CO.
Box 38, Racine, Wis.



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Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

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QUINN'S QUEENS OF QUALITY

Have Made Good—"There's a Reason"—
They are Thoroughbred, Pedigreed

GREY CAUCASIANS

The mountain bee of Mt. Caucasus is vigorous, hardy, very resistant, and exceedingly gentle. Bred in the light of **Mendel's Laws of Heredity,** good qualities are accentuated. The pioneer **scientific** queen-rearing establishment of America. We lead; others may follow. Extreme care is taken in the selection of drones from special queen-mothers—results are obvious. Apiary absolutely clean; disease unknown.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

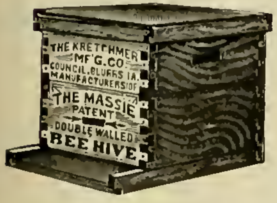
CULTIVATE HORSE-RADISH
GARDEN, FIELD OR FARM

Increasing Demand—Large Profits
100 Root Sets with full information $1.00

Write for list of our **$1.00 Friend Makers,** consisting of all kinds of Fruit Trees, Berries and Roses. Honey accepted in payment for all of our products.

VALLEY FARM CO., NEWBURGH, N. Y.

The Double-Walled Massie Bee-Hive



THE MASSIE HIVE
For Comb or Extracted Honey

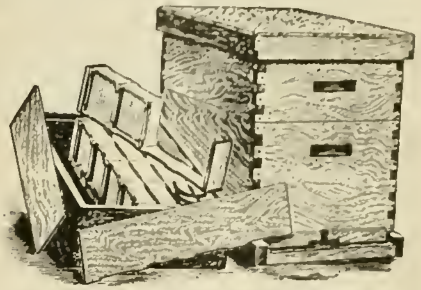
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames Made from White Pine

THE VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

WHY NOT GIVE US A TRIAL ORDER? SATISFACTION FULLY GUARANTEED EARLY CASH ORDER DISCOUNTS

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 1100 3d St., Council Bluffs, Iowa

SAFETY FIRST

You are always safe in buying Murry's bees and queens. Unexcelled for prolificness, gentleness and honey-gathering qualities. No disease. Health certificate with each shipment of bees and queens. Three-banded Italians. Goldens. Tested queens any time. Untested after March 25th.

Queens	March 1st to May 1st			May 1st to Nov. 1st		
	1	6	12	1	6	12
Untested	$1.00	$ 5 50	$10.00	$ .75	$4.00	$ 7.50
Tested	1.25	6.50	12.00	1.25	6.50	12.00
Select tested	2 00	10.00	18.00	1.50	8 00	15.00

Bees by the pound after May 10th. Safe arrival guaranteed to any point within six days of Mathis, Tex. Large orders must be placed 30 days in advance of shipment, accompanied by 25 percent advance payment. This means orders amounting to $50 and up.

Pound packages	1	12	50	100
1-pound package	$1.50	$16.00	$ 65.00	$127.00
2 " "	2.50	29.50	116.50	330.00
3 " "	3.75	44.75	117.50	352.50

There is no better way for the beginner to start with bees than with the old-fashioned nucleus. I make a specialty of shipping nuclei.

1-frame nucleus without queen	$1.50
2-frame " " "	2.50
3-frame " " "	3.50

Any number wanted at these prices. No queens included with bees by the pound or nuclei. If queens are wanted, add price of queen to price of nucleus or pound package.

H. D. MURRY, MATHIS, TEXAS

Sweet Clover Seed

QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu 60 lbs	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22 50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

Queens and Bees

FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2 50 each. Breeding queens, $5 00 each. One pound package bees, $1 25; 25 packages, $1 00 each; 2 pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2 75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

3-Band Italian Queens

My queens are bred from imported mothers. They are the best for honey gathering and gentleness. Not inclined to swarm.

Prices	April 1 to July 1		
	1	6	12
Untested -	$ .75	$4 25	$ 8.00
Select untested	.90	5.00	9.00
Tested -	1.25	7.00	13.00

Safe arrival and pure mating guaranteed

L. L. FOREHAND
Ft. Deposit, Alabama

Fine Queens and Bees

Queens from my honey gathering strains of three bands and goldens at the following low prices: Untested, one, $1.00; 6, $5.00; 12, $9.00; 25, $17.50; 50, $32; 100, $60. Tested queens, 1, $1.50; 6, $8.00; 12, $15. Nuclei or lb. packages, 1-fr. with untested queen, $2.50; 6, $14; 12, $26; 2-fr., 1, $3.50; 6, $18; 12, $34. If tested queens are wanted add price as above

D. E. BROTHERS
Attalla, Ala.

WESTERN BEE-KEEPERS can save honey and get the best goods obtainable, especially made to meet Western condition. Send for new catalog and special price list to

Colorado Honey-Producers' Association
Denver, Colorado

CYPRESS BY TEST

Substitutes by Talk

THE PROOF?—2 LETTERS FROM BEEMEN:

"Our correspondent makes serious complaints against...........and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter." (Etc.)— and here's another:

"Mr. ———, of ———, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE-BOTTOMS."

Is there value to you in an endurance test of 45 years in greenhouse sash? It is reported to us that sash made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868 are STILL DOING SERVICE.

IT WILL SERVE YOU AS WELL and save you the nuisance and expense of repairs and replacements.

The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you to an endurance test of 30 or 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good ordinary business sense.

WRITE US FOR VOL. I, OF THE FAMOUS CYPRESS POCKET LIBRARY WITH FULL U. S. GOVERNMENT REPORT ON "THE WOOD ETERNAL."

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EARLY-ORDER DISCOUNTS ON

DADANT'S FOUNDATION

Send us a list of the bee-supplies and foundation you will need for 1916, and we will gladly quote you our best prices.
It will pay you to buy early.

BEESWAX—We buy beeswax the year around and pay highest cash and trade prices. Light yellow wax from cappings is especially wanted. Your BEESWAX worked into foundation at moderate rates.

NOTE Old combs, cappings, and slumgum rendered on shares. Send for our terms. We will get all the wax and save you a "mussy" job.

DADANT & SONS,

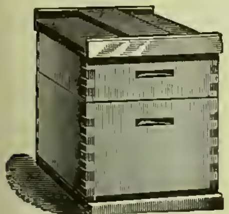
HAMILTON, ILLINOIS.

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., **Marshfield, Wis.**



EARLY ORDER DISCOUNTS WILL
Pay You to Buy Bee Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Missouri

START THE SEASON RIGHT

By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE
SAVES
HONEY
TIME
MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

FREEMAN'S FARMER North Yakima, Wash.
Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

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OUR VERY BEST IS THE VERY BEST
BEE SUPPLIES
Best Sections, Best Shipping Cases
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
H. S DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

TIN CANS

Low Prices on tin cans, especially the Friction-Top style. We buy in carlots and can save you money

DADANT & SONS
Hamilton, Illinois

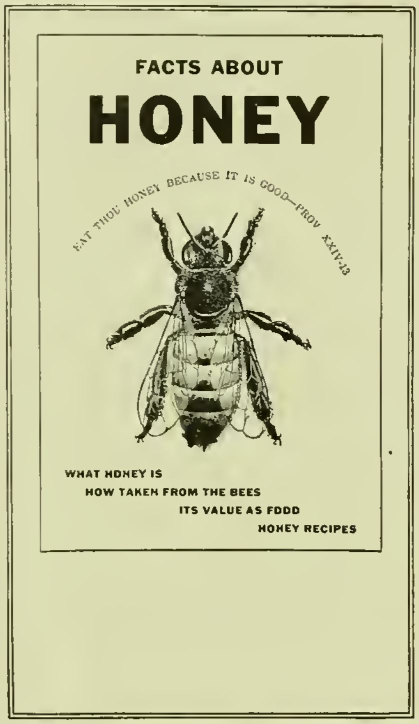
FIELD SEEDS

Full line including seed corn. Write for price lists.

F. A. SNELL
Milledgeville, Illinois

Quinby's New Beekeeping, by L. C. Root.—This is a modern edition of "Quinby's Mysteries." Mr. Quinby is well known to all beekeepers. He, with Mr. Langstroth, was responsible for much of the early growth in beekeeping in America. Cloth bound, 220 pages. Price, postpaid, $1.00, or with the American Bee Journal for one year, $1.75.

FACTS ABOUT HONEY



FACTS ABOUT

HONEY

EAT THOU HONEY BECAUSE IT IS GOOD—PROV XXIV-13

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the "Food Value of Honey," on page 404, of the December number of this Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that we have prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra -	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " " -	9.00
30 " " -	.75	2000 " " " -	17.00
50 copies, postage extra -	.75	5000 " " " -	40.00
100 " " " -	1.25	10,000 " " " -	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

American Bee Journal, Hamilton, Illinois

AMERICAN BEE JOURNAL

APRIL. 1916

College

New England Number

Dr. Gates, of Massachusetts, Demonstrating Bees

Send 25c. and the names of three fruit growers, and you will get a trial 12 months' subscription to the AMERICAN FRUIT-GROWER at one-half the regular price of FIFTY CENTS.

A monthly publication devoted to fruit growing, edited by practical orchardists, and published in the heart of the Appalachian fruit belt.

TRY THIS PRACTICAL, HELPFUL PAPER AT THIS SPECIAL RATE

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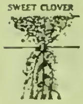

Unhulled and Scarified Hulled
WHITE SWEET CLOVER
YOONG-RANDOLPH SEED CO., OWOSSO, MICH.

Bee-Supplies

LET US FIGURE WITH YOU

We know we can satisfy you on quality. Write for catalog.

C.C.CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

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Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

BETTER FRUIT

and begin with the January issue, our Special Spraying Annual. Subscription price $1.00 per year in advance.

BETTER FRUIT PUBLISHING COMPANY
Hood River, Oregon

Beekeepers' Supplies

Such as Winter Cases, Hives, Sections, Covers, Bottoms, Bodies, Supers, Brood-frames of every description. Shipping-cases, Section-holders, Comb-foundation, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Sheboygan, Wis.

BEES

I furnish a full colony of Italian bees in a complete new 8-frame dov'd. hive for $10.50. In an 8-frame chaff hive, $12.50. In a 10-frame chaff hive, $14. This price includes a tested Italian queen.

Combs are all drawn from full sheets of wired foundation. Untested Italian queens, $1 10. Tested, $1.50. Catalog of bees and supplies free.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queens

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

Preparedness Pays Big Dividends

So fortify and equip yourself with our 1916 Catalogue. Now Ready. Write tod

LEWIS' BEEWARE, DADANT'S FOUNDATION, ROOT'S EXTRACTORS, SMOKERS, ETC.

Anything and everything you might need in Bee Supplies—and at ri prices. Ship us your old Combs and Cappings for rendering. Write for ter

THE FRED W. MUTH CO.
204 Walnut St. THE BUSY BEE MEN. CINCINNATI,

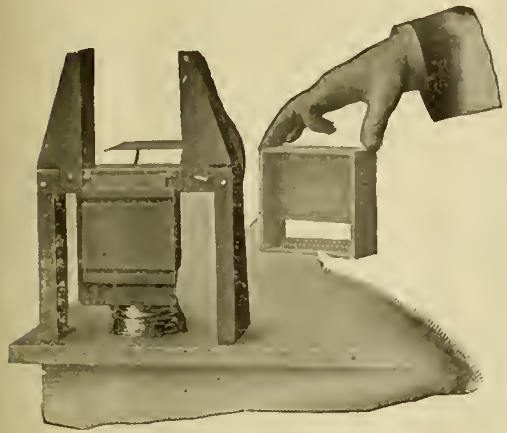
THE UTILITY POULTRY HOUSE AND YARD ON ROLLERS

Easily moved about about by hand.
Dimensions 10 feet by 10 feet.
Accommodates 18 fowls.
Economizes space, as the floor partly covers the yard, the roosts are hung above the floor and the nests above the roosts.
A small ventilating door at the top insures fresh air.
Floor easily cleaned in one minute with a hoe.
Separate doors and openings to yard, floor and nests.
Moved about a space of ground 15x30 will give the hens fresh green and clean ground all the time, as by the time the house is moved over the ground that it first occupied the grass and weeds will have had time to grow again.
In the winter the snow may be removed from a space and the yard moved over to the ground, preventing snow eating.
Warm in winter, as the house conserves the animal heat to an extent as the ventilating door at the top is closed.
The high pitch of the roof prevents leaks.
Floor above ground shut off at night protects from rats, foxes, skunks, etc.
Provides fresh, clean yard continuously.
Improves trees near which it is allowed to stand.
Fertilizes the ground, keeps chickens out of the garden, as the yard is enclosed at top.
Nests, Roosts, Floor and Yard all combined.
Is in fact positively the best thing in a poultry home for a colony ever put out.
Price—Knocked down f. o. b. Express or Freight, $8.50.

Protected and manufactured solely by

THE POULTRY EXCHANGE BONAIR FARM, R. D. 29 **STAMFORD, CONN.**

Woodman's Specialties



SECTION FIXER

GOLD MEDAL for the finest comb honey at the recent Michigan 50th anniversary convention, was won by Floyd Markham, of Ypsilanti Mich. He says:

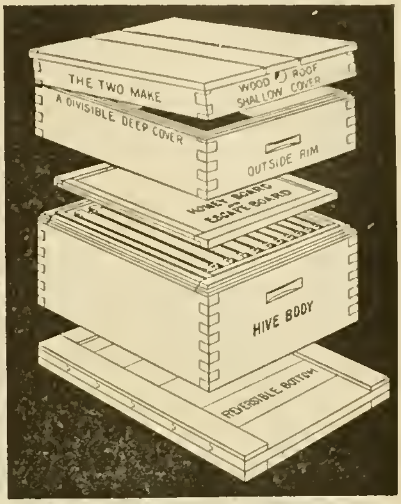
"We have several kinds of machines for folding sections and putting in the starters, but since we got one of your Section Fixers, about two years ago, no other machines for the purpose are used in our shop. It pays to use bottom starters and your Section Fixer is the only machine that I know of that will do the job at any rate of speed and do it right."

DO YOU KNOW that with this machine you always handle large pieces of foundation, which makes the putting in of bottom starters easy. Special circulars will tell you all about it. Price $2.75 with lamp and one form block, shipping weight 5 pounds, postage extra.

PROTECTION HIVE

Air spaces or packing as you prefer. Seven-eights' material in the outer wall, which means that they will last a life time. Used and endorsed as the best hive on the market by many prominent beekeepers of this and other countries.

Price, $14.75 for five hives, delivered to any station in the U. S. East of the Mississippi and North of the Ohio Rivers.



1 Story Protection Hive with divisible deep wood roof cover, consisting of shallow cover and rim.

NORWICHTOWN, CONN., May 24, 1915.

Our State Agricultural College has just been voted a generous sum of money to be used in the construction of an Apiarian Building and outfit. They are negotiating with me for some colonies, and I will furnish them in your Protection Hives, for I believe them to be the best on the market.

ALLEN LATHAM

Send for catalog and special circulars. We are e beehive people. Send us a list of your requirements for 1916, and let us figure with you

A. G. WOODMAN CO., GRAND RAPIDS, MICHIGAN

TIN HONEY CANS—LOW PRICES

Our three-year contract is protecting us from high prices until July 1st. We will give the beekeepers the benefit of our low prices, so be sure you secure your supply before that date. 60-lb. cans shipped from Ohio factory or Chicago—friction-top from Chicago. Give us the quantity wanted and let us figure with you. Friction-top cans and pails—5-lb. size, per 50, $2.50; 100, $4.50; 203, $8.50; 1015, $40 10-lb. size per 50, $3.50; 100, $6.25; 113, $6.75; 565, $33.75.

A. G. WOODMAN CO., Grand Rapids, Michigan

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

THERE OUGHT TO BE QUALITY HERE

"We are furnishing Kennith Hawkins, the 'Quality Hill Queen' Breeder, one of our 'Queens of Quality,' and will offer queens from one of The Review mothers crossed with his 'Quality Hill' Drones for 1916. Mr. Hawkins' breeders originated with Doolittle. We do not think one can make a mistake in buying this stock."

The Review, Dec., 1915 This Townsend breeder exceeded the average of 1100 colonies by over 500 percent last year. These excellent honey queens 1, $1, 6, $5, 12, $9 until July 1. Write for booklet on Quality Hill Queens and pound packages, and *get our special discount for quantities.* There sure will be quality here.

KENNITH HAWKINS, PLAINFIELD, ILLINOIS

Archdekin's Fine Italian Queens

3 BANDED

Prolific—Hardy—Gentle—They are Persistent—Profitable Producers—None Better

Prices	Before July 1			After July 1		
	1	6	12	1	6	12
Untested.....	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.00
Tested........	1.50	8.00	15.00	1.00	5.50	10.00
Sel, Tested...	2.00	10.00	18.00	1.50	8.00	15.00
2-fr. Nuclei...	2.50	14.00	26.00	2.25	12.00	22.00
1-lb. pkg. bees	1.50	13.00	25.00	1.25	7.00	13.00
2-lb. pkg. bees	2.50	14.00	28.00			

Above prices of nuclei do not include queen. Add price of queen wanted. Satisfaction and safe arrival guaranteed. Absolutely no disease in this country. Get your order in early and secure prompt delivery. Orders booked if half of amount accompanies order. Queens ready April 15th. Nuclei and packages May 1st.

J. F. ARCHDEKIN, Bordelonville, La.

CULTIVATE HORSE-RADISH

GARDEN, FIELD OR FARM

Increasing Demand—Large Profits
100 Root Sets with full information $1.00

Write for list of our $1.00 **Friend Makers,** consisting of all kinds of Fruit Trees, Berries and Roses. Honey accepted in payment for all our products.

VALLEY FARM CO., NEWBURGH, N. Y

You Should Earn $25 Per Colony from Bees this Season

THIS can be accomplished if you have a young prolific queen and a strong colony when the honey flow arrives. Many beekeepers fail to secure the greatest possibilities from their bees because their colonies are not strengthened and built up early in the season, making it possible for them to take advantage of the honey flow when it arrives. This should be a good season for clover honey, as weather conditions last year throughout the country were the best we have had for many yeas for securing a good strong stand of clover

We now have a large queen-rearing outfit in Florida for the express purpose of supplying you with EARLY QUEENS AND BEES IN PACKAGES. We are breeding from queens that gave a surplus of 300 pounds per colony in a 24 day honey flow. You should have this strain of bees in your yard, and insure the placing of each of your colonies on a paying basis. We have a large supply of queens at this time, but as orders are coming in rapidly, we recommend that you provide for your requirements early.

Island Bred Italian Queens. Shipments began March 1st.

	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00

Tested Breeding Queens, $5.00 and $10 each.

Prices on Bees by the pound f. o. b. shipping point.
Shipment begins May 10.

	1	6	12
½ lb.	$1.50	$ 7.50	$12.00
1 lb.	2.00	10.50	18.00
2 lbs.	3.00	15.00	27.50
3 lbs.	4.00	21.00	36.00
5 lbs.	5.50	27.50	50.00

(These prices are without Queens.)

Prices of Nuclei and Full Colonies without Queens. Shipping now.
1 Frame Nucleus, $2.00; 2 Frame Nuclei, $3.00; 3 Frame Nuclei, $4.00; 5 Frame Nuclei, $5.00; 8 frame Colony, $8.50; 10 Frame Colony, $10.

Address all communications to

THE J. E. MARCHANT BEE & HONEY COMPANY, - Canton, Ohio

"MARTINE FOUNDATION FASTENER"

PATENT APPLIED FOR

Latest and best device invented for fastening foundation securely to the frame or section with a tiny stream of hot wax.

Prevents breaking down of foundation with the weight of the bees, thereby avoiding crisscross combs.

Saves expense, time and labor.

One filling of the fastener is sufficient to fasten the foundation in five frames and can be done in one-third the time required by any other device. Price, 50 cents, postage paid. Satisfaction guaranteed. On sale only by

J. P. MARTINE & SON Beekeepers Supply Dealers
206 East Jefferson St., Louisville, Kentucky

Northern Bred Italian Queens

More hardy than Southern bred. Try them once. Untested, $1.00. Sel. tested, $1.50. Plans for beginners, "How to Introduce Queens and Increase," 25 cents.

E. E. MOTT, GLENWOOD, MICH.

WE ARE READY

To figure on your wants. Send us a list of goods and we shall be pleased to quote you the very lowest price for the best goods. Established 1899. Our catalog may interest you.

H. S. DUBY & SON, St. Anne, Ill

240,000 POUNDS or 120 TONS OF COMB FOUNDATION

That is the Amount We Manufactured and Sold in 1915

This Extraordinary Output Must Mean that

Root Foundation Has Quality

56,000 pounds was made and sold from our branch factory in Los Angeles during ten months of 1915

New York
Philadelphia
Chicago
St. Paul
San Francisco
Los Angeles

The A. I. Root Company
Medina, Ohio

Washington
Des Moines
Syracuse
Indianapolis
Zanesville, O.
Mechanic Falls, Me.

Embargo on Bee Supplies
In the East

BEEKEEPERS in the Eastern States, particularly in New England, should not delay ordering their stock of supplies as early as possible. The Eastern railroads are conjested and have even placed an embargo on shipments to various points, refusing to accept freight until their roads are unburdened. Ordering your requirements a month earlier than usual will not cost any more and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

Our New England States representatives, Ross Brothers Co., 90-92 Front Street, Worcester, Mass., have a large supply of "**Falcon**" bee-supplies, and are especially equipped to handle the New England States beekeepers' orders whether they be large or small.

Those beekeepers living in the New England States can order direct from the factory at Falconer, N. Y., or can write for the name of the nearest dealer as they find it more convenient.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

NOW IS THE TIME

To order your supplies, and thus have everything in readiness for spring

We carry a full line of Root's Goods at all times, and are always prepared to fill any and all orders on short notice.

Hives, supers, frames, sections, comb foundation, section-presses, foundation fasteners, queen-excluders, queen, and drone traps, swarm-catchers, feeders, honey and wax extractors, capping melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the beekeeper requires for the proper conduct of an apiary.

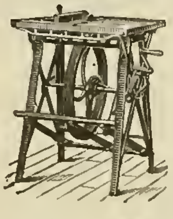
C. H. W. Weber & Company, 2146 Central Avenue, Cincinnati, Ohio

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association and has incorporated with it the former Canadian Bee Journal.
Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.
Well illustrated and up-to-date. Subscription price postpaid.
Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year.
Sample Copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.



BARNES' Foot-Power Machinery

Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

COLO HONEY PROD ASSN
DENVER

CUT DOWN EXPENSES

By using labor saving devices, The Rauchfuss Combinded Section Press and Foundation Fastener, The Rauchfuss Foundation Cutting Box, The C. H. P. A. Section Scraping Knives are three articles that will save comb-honey producers many precious hours during the busy season. They are now used by many beekeepers of the West, and the price is low enough to place them within the reach of all. Write today for our 68-page Illustrated Catalogue of the best bee-supplies made.

THE COLORADO HONEY PRODUCERS' ASSOCIATION, Denver, Colo.

TESTED QUEENS BY RETURN MAIL
$1.00 each

These Queens are not culls or inferior in any way because they are cheap. They were reared last September and October, and wintered in 4-frame nuclei, expressly for our early trade in tested queens. We guarantee every queen to be good as the best. No disease in our apiary.
Untested queens early in April, $1.00 for single queen; $9.00 per dozen.

J. W. K. SHAW & COMPANY
Loreauville, Louisiana

MAKE THIS A

LEWIS YEAR

While you are starting the year's work—getting your bees ready for business—taking stock of supplies on hand and speculating as to what the season's outcome will be

MAKE THIS RESOLUTION

That you will use LEWIS BEEWARE this year—because it means success insurance to you---because it means bee-hives and parts made of the best material by skillful workmen---because it means goods accurately and systematically packed---because it means sections made of bright lumber, highly polished, accurately dovetailed and scientifically grooved.

LEWIS HIVES ARE BUILT LIKE FURNITURE

Lewis sections are the kind that do not break in folding

You will find Lewis Beeware almost at your own door—thirty distributing houses in the United States and foreign countries. If you have not one of our catalogs, send for a copy at once.

G. B. Lewis Company

Exclusive Manufacturers—Lewis Beeware

Watertown, Wisconsin, U. S. A.

AMERICAN BEE JOURNAL

Vol. LVI.—No. 4 HAMILTON, ILL., APRIL, 1916 MONTHLY, $1.00 A YEAR

Beekeeping in Massachusetts

What One State is Doing for the Advancement of the Honey Producing Industry—By Frank C. Pellett

IN many respects Massachusetts is doing more for the beekeepers than any other state. There have been courses offered for a longer or shorter period in the agricultural colleges of several states, but it remained for Massachusetts to set the pace by being the first to take up beekeeping seriously and place it on the same footing as other agricultural activities. As much of the pioneer work in the development of practical apiculture was done in New England, so the pioneering in educational work along the same line has also been done there.

As was said in the article about official beekeeping at Washington, beekeeping as a serious business is very new; so new, in fact, that the general public has not yet come to take it seriously. Too many beekeepers regard it as a business of such limited possibilities that they fear the development that will come from the entry of new men into the field. The authorities of the Massachusetts agricultural college were among the first to realize something of the possibilities of honey production. They were able to see that as a specialty it was bound to prosper, as vegetable growing, dairying, floriculture and other agricultural specialties are doing. Provision was made accordingly, to lend the same encouragement to beekeeping that was offered the other lines.

The work was started on a modest scale by the employment of Dr. Burton N. Gates, at that time of the U. S. Department of Agriculture, to give a short course of lectures. The interest justified further work along this line, and Dr. Gates was eventually induced to take up the work permanently at Amherst.

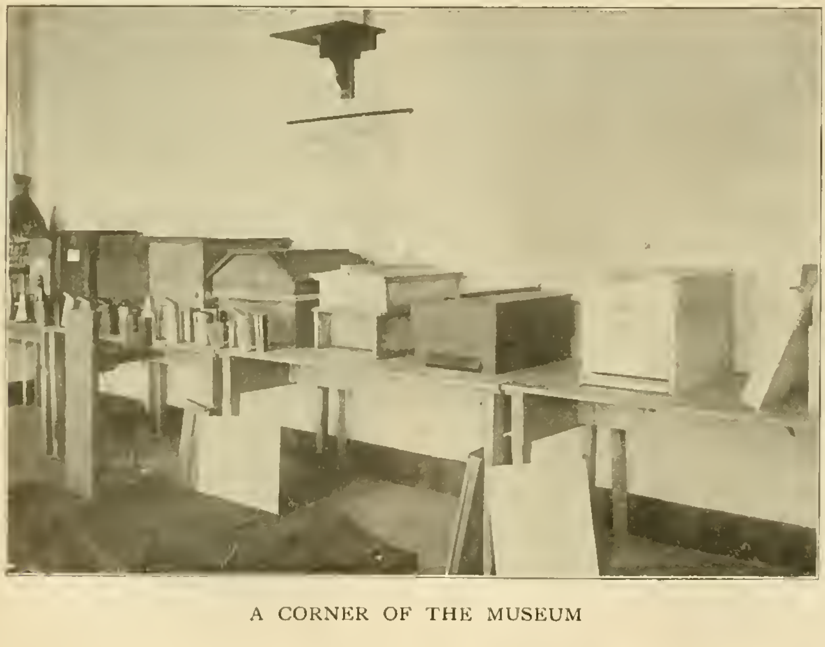
Since Massachusetts was the first state to organize the beekeeping work extensively, there was no precedent to serve as a guide. Dr. Gates and his associates are therefore entitled to a great deal of credit for the admirable manner in which the work has developed. There is a tendency in some agricultural colleges to make the work in various departments so technical as to be of little real value to the man who seeks training for practical work. The writer has heard the complaint that boys trained in some agricultural colleges were no

THE APICULTURAL BUILDING

DR. BURTON N. GATES.

CLASS IN APICULTURE IN THE MUSEUM

longer of value on the farm, as they were filled with fine spun theories which would not work in practice. Fear has been expressed in several quarters that similar conditions would prevail in the new courses in beekeeping that are now being offered in several institutions. A recent visit to Amherst convinced the writer that Dr. Gates is very practical in his instruction, and that the student will know something besides the anatomy of the honey bee when he gets through. While Dr. Gates places due importance on the scientific side of beekeeping, he insists that everything must first be practical, bearing in mind that greater efficiency in honey production is the ultimate aim of apicultural education.



A CORNER OF THE MUSEUM

One feature that especially pleased the writer is the centralizing of all apicultural work under one head. Dr. Gates has charge of the apicultural work for regularly enrolled students, investigation for the experiment station, apicultural extension authorized by the extension service, and, also, the inspection work under the State Board of Agriculture. Where these different lines of work are handled by different persons without the same central authority, it is out of the question to secure as efficient service and as satisfactor, results as is possible under the Massachusetts plan.

Four years experience as state inspector of apiaries has convinced the writer that best results from inspection work will never be secured in any other way. Special skill is required in inspection work and an inspector should have wide experience in bee diseases. In an epidemic of glanders, none but trained veterinarians are permitted to represent the state. While an inspector should be a practical beekeeper he needs at the same time a special training that few beekeepers have. Where the work is properly correlated it is quite possible to utilize the services of the same man in inspection work at one season, and extension work or some similar line the rest of the year.

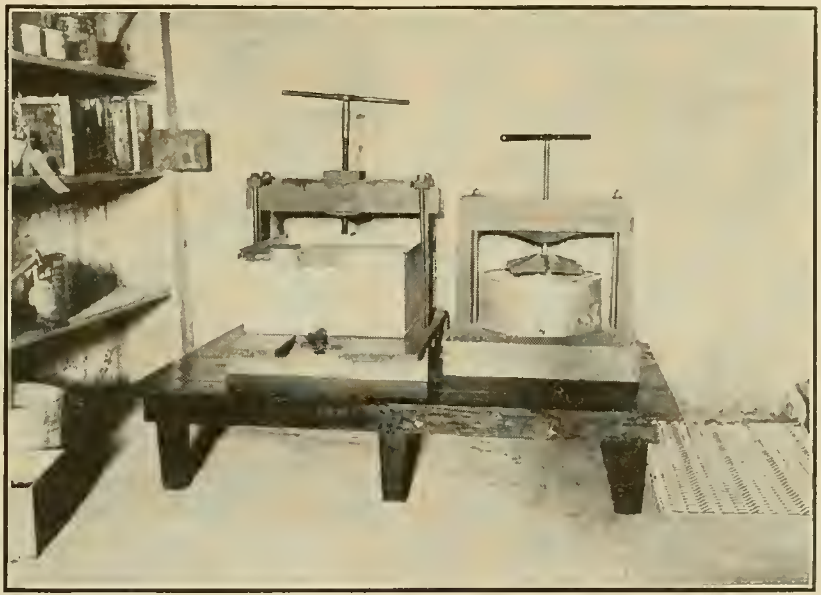
Massachusetts makes a larger appropriation for inspection work than most other states, considering the size of the state and the number of apiaries. The work

WAX EXHIBIT AT THE COLLEGE

is very thoroughly done. Beginning in an infected locality every colony of bees is examined in an ever widening circle, until the limit of infection is found. In many states such thorough work is impossible because of lack of funds. The effect of the work is aparent in comparing the percentage of infected apiaries in 1911 and in 1914. During that period of time the percentage has dropped from 45% to 14%, while there has been increased interest in bee culture owing to improved conditions. Dr. Gates regards the inspection work as an educational unit in the general system, and while diplomacy is sometimes necessary in dealing with a refractory case, there is no longer any question of the value of the work to the beekeepers of the state.

THE COURSES.

Dr. Gates announces that the work as given in the college has but one primary aim, viz., to fully equip the student with the fundamentals of the industry. However, since research work requires broad training in the sciences as well as in the art of beekeeping, courses are so arranged that those who need the scientific training can readily take it in connection with the practical work. Space will not permit detailed account of courses offered. Interested persons can secure full information from the catalogue .

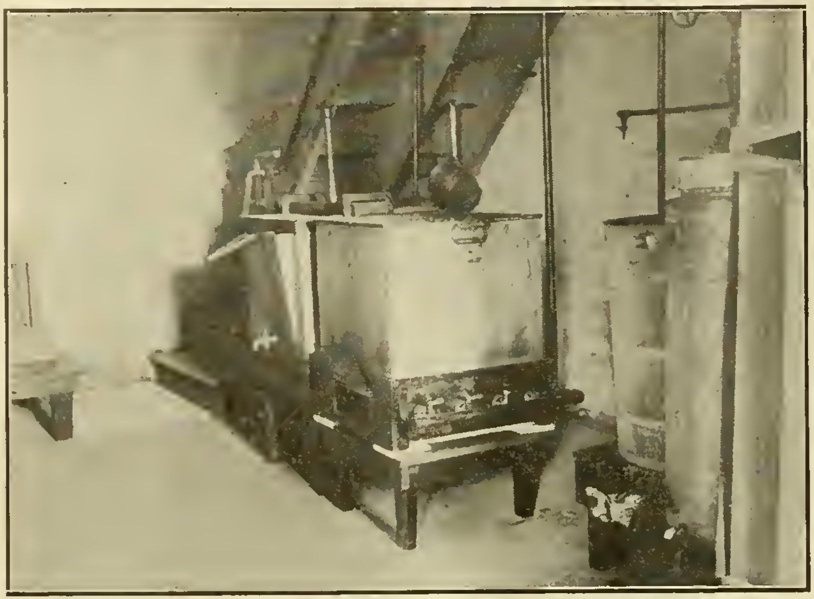


WAX EXTRACTORS SET UP FOR COMPARISON AT MASSACHUSETTS

JOHN L. BYARD IN THE COLLEGE APIARY

THE MUSEUM AND LIBRARY.

Nowhere in the world, perhaps, is there a museum of beekeeping utensils equal to the one at Amherst. Dr. Gates has collected thousands of specimens of utensils of every conceivable kind, both American and foreign. The natural history of the bee and the products of the hive are illustrated by numerous illustrated examples. The museum affords a splendid opportunity for comparisons of the equipment used for various sections of the country and systems of management. The supplies offered by the various manufacturers are placed side by side, and the interested beekeeper is able to see for himself what are the merits of the various brands. The development of apiculture is nicely shown in the various kinds of hives and implements that have been used during the past half century. Straw skeps, box hives, cupboard hives and almost all the other kinds in use before the standard hanging frame hive came into use, are displayed. It is worth a long journey just to visit this museum and see this wonderful collection. The writer had never seen Allen Latham's let-alone hive until he visited the museum, nor had he seen a number of other articles of equipment often mentioned in the beekeeping literature. The student who has this wealth of material at hand when he is studying the books and papers relating to his specialty will have a splendid opportunity to become familiar with everything in the way of equipment that has been used in recent years, as well as many things long obsolete. There are some things of historical interest, such as



PART OF THE WAX RENDERING EQUIPMENT

equipment used by Langstroth when he was making his experiments.

The library of beekeeping literature is also very complete and the student has the advantage of a reference list such as is to be found in few places in this country. Dr. Gates is laying a splendid foundation for a permanent institution and the museum and library are very valuable features.

APIARY AND GARDEN.

There is nothing particularly striking about the apiary. It is much like any other well kept apiary where up-to-the-minute practice is followed. The bees are in standard hives and the students are thus able to become familiar, by actual practice, with the equipment and methods of manipulation commonly used in well regulated apiaries. There is a well equipped workshop where the student is given actual practice in nailing up hives and assembling supplies. There is the usual equipment in extracting and bottling honey so that all the operations necessary to successful honey production are followed out as part of the regular class duty. Both out-of door and cellar wintering are practiced. The bee cellar is as good as can well be made and the packing cases are of the four colony size. After preparing the bees for winter by both methods and noting results the following spring, the student has received the best possible instruction in proper wintering. It is very apparent that every step is followed in the same practical manner.

A garden of honey producing plants is now being developed, where the various plants to be found in that section may be gathered and studied. The time when each secretes nectar can be noted, and the comparative value considered.

Since several short courses of varying length are given, every facility is offered to students to make the best possible use of such time as is available. The winter students, of necessity, lack the opportunity of actual work in handling bees, but apiary work and hive manipulation are a part of all the summer courses as well as the regular full year courses.

WAX RENDERING.

The wax rendering station is a unique feature of the institution. We had intended to describe it somewhat in detail, but this article is already very long. The field work in connection with inspection and extension soon convinced the college authorities that thousands of pounds of wax were being lost every year because the average beekeeper is not equipped to care for it properly. The man with but a few bees seldom has the necessary equipment for rendering wax thoroughly and the crude methods in common use waste a large part of the product. Wax is the highest priced commodity which the beekeeper has to sell and he can ill afford to waste it even though the amount is small.

In order to meet the need which was so apparent the wax rendering equipment was installed. The work is done entirely for the benefit of the beekeepers of the state and without any financial profit. The charge is the actual cost of operation. By means of the superior equipment they are usually able to get enough more wax than the beekeeper could get, to pay for the cost of rendering. This is quite an advantage since it saves the producer a mussy job. While the writer has never had the opportunity to take advantage of such a station conducted for the benefit of the beekeeper at cost of operation, he has found that some commercial establishments are able to get enough more wax than he can to make it unprofitable for him to render his own wax. Accordingly it is all carefully gathered through the season and sent to such a firm in kegs. The returns have been very satisfactory. The practice of shipping of combs, cappings and refuse wax to commercial establishments is becoming more common every year as beekeepers learn of the saving in labor.

For each shipment sent to the college there is a blank to be filled out by the shipper. This gives full instructions for the disposition of the wax. Sometimes it is sent to market to be sold, sometimes returned to the shipper and again it may be sent to some supply dealer to be made into foundation. The wax rendering service is evidently very popular with the beekeepers of the state.

A BATCH OF WAX RENDERED FOR THE PUBLIC

Trading in Live Bees

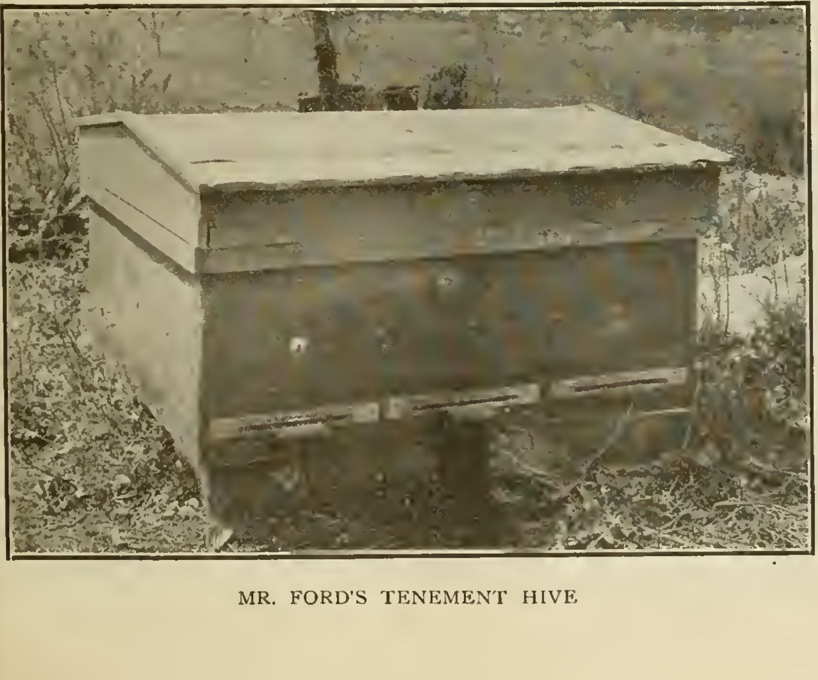
BY E. I. FARRINGTON.

Every year thousands of bees are used in greenhouses, particularly in those sections where cucumbers are raised under glass. It is impossible to grow cucumbers in winter without bees, unless, indeed, the tedious and expensive plan of fertilizing the blossoms by hand is resorted to. In long houses a hive is located every 150 feet. In 200-foot houses, which are common, one colony is sufficient to a house. Sometimes the hive is placed near the middle aisle and sometimes at the side of the house with another opening leading to the outside. The average greenhouse man knows very little about bees and has no desire to increase his knowledge. As a result, a considerable proportion of the colonies perish before the end of the season and when it is time to fill the house with cucumbers again, it is necessary to buy more bees. One big greenhouse concern in Massachusetts has spent nearly $175 for bees in one season. In sections of the country where greenhouse work is an important industry, the breeding of bees for the cucumber growers has come to be a specialized line.

CLASS IN APICULTURE AT THE SUMMER SCHOOL

Benjamin A. Ford, of Abington, Mass., makes a large part of his living by selling bees to cucumber growers. It is not unusual for him to start the winter with 200 colonies, which number is reduced to 50 or 60 by Spring, all the others having been sold to the greenhouse men. At one time Mr. Ford had three outapiaries, but he has given them up because of the attention required by other lines of work on his little farm, a farm, by the way, which the bees have made possible. It has been found that a combination of bees, pigs and small fruit give a good living on ten acres.

Mr. Ford winters his bees in a manner different from that of most beekeepers in New England. He uses what are termed tenement hives which are really covered boxes large enough to accomodate five eight-frame hives. There is a separate opening for each hive so arranged that it comes just opposite the hive entrance. Three of the hives stand side by side at the front of the box, their entrances coming near the sides of the box at the rear. By that arrangement the tenement hive is filled and there is little waste room. The top, which can be lifted off, has a sloping roof to shed water, and some straw or other similar material is wedged between the hives in the Fall to give extra protection through the winter months. There is but little loss and not much more stores are consumed than when bees are wintered in the cellar. Mr. Ford has tried both plans and likes the present method well enough to continue it year after year. The tenement hives are used in summer as well as in winter, and they aid in keeping the bees cool in hot weather.



MR. FORD'S TENEMENT HIVE

The best granulated sugar is fed in large quantities, especially in early Spring. Full sheets of foundation are used in the new frames placed in the hives when the colonies are divided, unless there are partly drawn combs that can be used left over from the previous season. Mr. Ford rears his own queens and of course uses a good many each season.

The business is one which seems likely to grow rather than otherwise, for there is a constant increase in the growing of cucumbers under glass and, besides, a call for bees is coming from orchard men and the owners of cranberry bogs. The value of bees to cranberry growers is just beginning to be realized, and the demand will doubtless grow from year to year. There is a bright future for beekeepers in the East, not only from the increased demand for honey stimulated by honest advertising, but because the value of bees by fertilizing the flowers of fruit and vegetables is coming to be understood as never before.

Weymouth Heights, Mass.

(Probably very few of our readers realized that the demand for bees in greenhouses was as large as this interesting statement shows.

The only fault that we can find with this method of keeping hives, five in a box, is the possibility of rendering the bees irritable when one of the colonies in such a box is being handled, as the jarring stirs up the other four. The only way would be to smoke all of them before handling any. But such a box is ideal for bringing colonies through winter out-of-doors, wherever bees are confined in a hive for several weeks in succession. Editor.)

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Frank C Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

More About Sweet Clover

This office is in receipt of two very valuable booklets on sweet clover put out by the extension department of the International Harvester Company at Chicago.

The larger, 64-page booklet, entitled, "Sweet Clover No Longer a Despised Weed—A Valuable Crop," is an excellent source of information to any one interested in this crop. It gives a description of the plant, method of sowing the seed, influence of different soils on growth, etc., and also reports of the experiences of reliable farmers in scattered sections.

The second booklet, "Sweet Clover Adapted to the Northwest," gives all the advantages of this plant in the sections discussed, It deals especially with the northwestern States, and is a 36-page pamphlet very recently published.

Both of these booklets are for free distribution and may be obtained by addressing request to the Extension Department of the company as above.

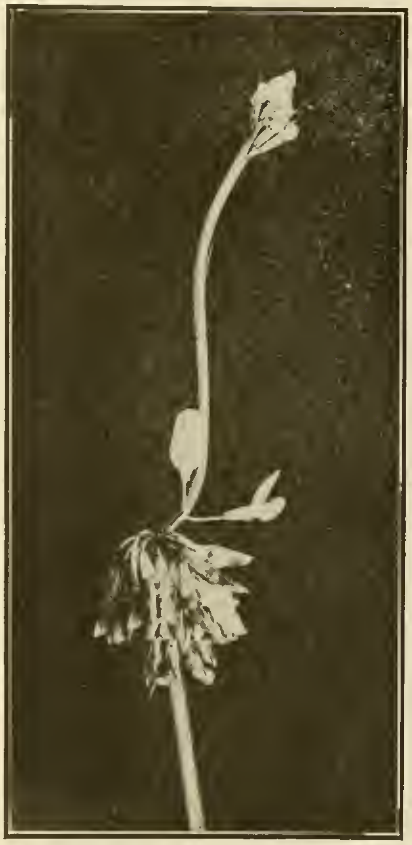
A Collection of Honey Samples

We are beginning a collection of honey from different sources and hope to make it as complete as possible. These samples will be labeled with the date and locality where produced, the name of the producer and the source from which they are gathered. We intend to keep this collection in a case in the office of the American Bee Journal, and will greatly appreciate the assistance of our readers in securing the samples. All honey should be as pure as possible and about a pound to the sample.

Honey comes from so many sources that such a collection should be of much value. Samples intended for this collection should be addressed to the American Bee Journal and not to any member of the firm. It will be used to assist our readers to determine the source of their crops in doubtful cases, and is not designed for any commercial use.

Dr. Cook to Retire

A recent issue of the California Cultivator contains the information that Dr. A. J. Cook has announced that he will shortly resign from his position as State Horticultural Commissioner of California and take a much needed rest. It seems that Dr. Cook is not enjoying the best of health, and that he feels it is time to have a change. He is well known to the beekeepers as author of "Manual of the Apiary," and was formerly a professor in the Michigan Agricultural College, where he was one of the first to offer a course in bee-culture.



Prolification in white clover, or the extension of stem and the production of a second head of flowers above the first.—Photo by John H. Lovell.

Death of a Well Known Editor

Henry Wallace, founder and editor of Wallace's Farmer, is dead. He passed away very suddenly at the Methodist church in Des Moines, Iowa, on Tuesday evening, Feb. 22.

Mr. Wallace was one of the best known writers in the entire field of agriculture, and enjoyed the confidence of men in all walks of life. A truly great man has gone from among us and his passing is widely mourned.

Cooperation in Honey Sales

Comments upon the leading article in our March number on a publicity campaign and cooperation, are made by some of our readers. Some discouraged producers ask why the National Beekeepers' Association has so utterly failed in the proposed system of concentralization, if cooperation is as sure of success as some enthusiasts claim. They say that the citrus growers are wealthier, have more at stake than the beekeepers, and can better afford to pay expensive men to manage their advertising and their sales. This is true.

But perhaps the beekeepers are not starting this thing right. When we build a house, we do not plan the top of the edifice at first. We begin with the foundation. Have we done so?

The National Association started to organize beekeepers centrally, before they were sufficiently organized locally. Our National meetings have thus far always been composed of a large number of beekeepers living in the immediate vicinity of the place selected for meeting and of a few leading producers, dealers, queen breeders, writers, and publishers from a distance. With an organization of this kind, little if any money could be put into any plan that would benefit the beekeeping world.

The beekeepers are scattered producers. In only a few privileged spots are they close together in sufficient numbers to help each other. Even in places where they are fairly numerous they have rarely considered cooperation. Yet cooperation for the advertising and sale of their product, or for the purchase of their supplies, must begin at the bottom. They must build the cellar before they can hope to erect the house.

There are several associations now organized to help the apiarists. But among them we know of only one which is a positive success so far, "The Colorado Honey Producers." Their manner of organizing was described in the American Bee Journal for April, 1915, by their secretary, Mr. Rauchfuss, who may be called one of the most efficient men in our pursuit, for he is a practical beekeeper, an efficient salesman and a good manager. As Dr. Miller wrote, "A Frank Rauchfuss is not to be found growing on every tree." This is true. Yet in order to succeed in organizing the beekeepers of America in the manner in which the citrus growers are organized, it will take a "Rauchfuss" in each of many different districts of this immense country. When an organization is made, and in successful activity, in each of 20 or 30 honey-producing districts, cooperation between these will become an easy matter. They will then be able to send to some central meeting their most capable managers with clear understanding of what is needed.

Is this not plausible and do our friends see any other way to succeed?

We must not expect such a scheme to mature in one day, or even in one year. But if we are agreed that cooperation "from the bottom up" is likely to be a success, let us try to gather the stones that will wall the cellar upon which the structure is to be erected. Let each locality, where half a dozen producers or more can get together, organize a nucleus association, having in view the improvement of the market and the securing of supplies for its members. Each step must be taken with deliberation. None but careful, honest and industrious men must be selected to be entrusted with the interests of their members.

Since the greatest difficulties in the way of organization are caused by the isolation of the bulk of our producers, it is quite likely that many spots will remain unorganized for a long time. This should not deter those who are close together from associating. Thus far, little has been done but discuss points in apiary management at any of the local meetings. Let the question be widened to mutual help in honey selling.

Success for the beekeepers, in disposing of their product at remunerative prices, means success for the bee-magazines. It means also success for the queen-breeders, for the writers of bee-books, for the manufacturers of bee-material, for everybody who is in any way connected with bees and their product. We should, therefore, all push together to get the band wagon out of the rut.

The National Convention

The attendance at the National which met at Chicago Feb. 22-24, was fully up to expectations. Since the delegate plan of representation was adopted the attendance has never been up to former years. Only five States were represented by delegates: Minnesota, Michigan, Tennessee, Montana and Idaho. Neither Pres. Gates nor Sec. Foster was present, and there was serious talk of disbanding the organization. After much discussion it was decided to elect new officers and to reorganize on the old plan. During the coming year an effort will be made to eliminate the last of the objectionable features of the new organization, which is the representation by delegates. The Review has been sold to Editor Townsend, who will conduct the journal on his own responsibility. It should be greatly to the advantage of that publication to be separated from the National, owing to the differences that have developed. Mr. Townsend is a capable beekeeper of long experience, and it would seem that there is ample room for the present number of bee journals without conflict.

Prof. Francis Jager, of Minnesota, was elected president, Dr. Copenhaver, of Montana, vice-president, and F. E. Millen, of Michigan, secretary. A better selection of officers could not have been made, in the opinion of the writer, who is himself one of the retiring officers. Prof. Jager is an exceedingly efficient and active educator. Mr. Millen has proven a very expert and diligent secretary in the Michigan Association, and Dr. Copenhaver is a new man who ably represents the far West. All three of them were in attendance.

Francis Jager, of Minnesota, National Association President

Miss Emma Wilson was elected to membership in the board of directors. In order to eliminate all unnecessary machinery, the three executive officers were also elected directors. The present constitution provides for individual membership in the association whether or not a State association is affiliated. It was understood that at the next meeting the association would be placed on a basis which would give every member in attendance at the conventions full authority to vote on every question before the organization and that the activities of the organization in the future would be confined entirely to educational matters.

A resolution was adopted calling upon Congress to provide for extension work in beekeeping through the United States Department of Agriculture.

An interesting demonstration of the Ferguson uncapping machine was made by its inventor. After long periods of experiment this machine at last bids fair to be successful. By means of electric current or steam the instrument is kept warm, much like the steam knife is heated. Some adjustment to uneven combs is also possible. The writer, for the first time, feels that a practical uncapping machine is now within sight.

Among those present three aged men who have been closely associated with the organization and with the development of beekeeping for many years deserve especial mention. Each in turn was introduced to the audience and requested to say something. Dr. C. C. Miller, because of his prolific writings and unusual success is perhaps the most widely known living beekeeper. He was accorded a warm demonstration and listened to with marked attention. M. M. Baldridge is also well known, and told of his acquaintance with Langstroth and of the introduction of the Italian bee. F. Wilcox, of Wisconsin, was the third man of the trio.

It is to be hoped that the change of policy will enable the National to resume its old time interest, and that future conventions where all members enjoy equal privileges will be largely attended once more.

F. C. P.

Honey Flora of New England

BY JOHN H. LOVELL.

(*Photographs by the author.*)

NOT so very long ago, as geologists reckon time, New England was covered with an immense sheet of ice thousands of feet in thickness. Slowly the great glacier moved seaward. The downward pressure was enormous—450 pounds to the square inch for every thousand feet of ice. The forests, the entire vegetation, even the soil was swept away. The underlying rocks were planed, furrowed, ground down, pulverized as by a huge millstone. There was visible only a barren sheet of ice and snow.

But at last the ice melted and the rivers were filled with floods and the valleys with great lakes. The new soil, composed of clay, sand, gravel and boulders, with large areas of barren ledges, was far from being propitious to a new growth of plants. Do you wonder that New England has a meager flora, or that its vegetation is starved and scanty? How widely different are the conditions in California, which was never covered with ice. Here the valleys and foot-hills display a multitude of beautiful and varied flowers with more species than are to be found elsewhere in this country in an equal area.

As a result of the glacial period New England contains comparatively few honey plants. Most of the honey is stored from white clover and the goldenrod, although in special localities sumac, fruit bloom, tobacco and other species rise to local importance. The majority of the apiaries are of small size, averaging from four to six colonies, although in favored sections 100, or a larger number have been reported. According to the census of 1910, there was during the preceeding ten years a large decrease both in the number of beekeepers and colonies. Certainly any one would hestitate to attempt to gain, by present methods, a livelihood from bees in New England.

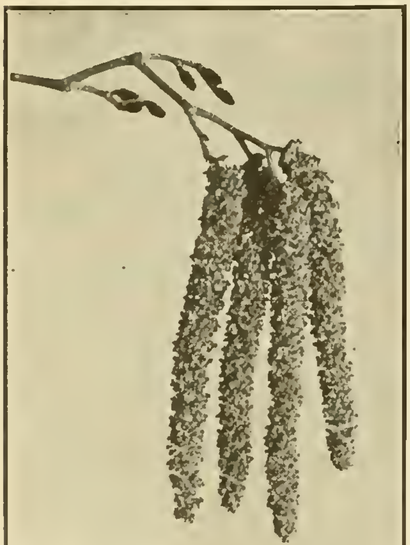


FIG. 1—Common hoary alder (*Alnus incana (L.) Moench*). The alder is the earliest common source of pollen in New England. The flower-buds are formed the preceding season and open long before the leaves have appeared. The flowers are wind-pollinated and nectarless.

No serious attempt has yet been made to list the honey plants, and the honey flora is totally ignored by most beekeepers. In the case of the little bee-yards, managed largely on "the let-alone" plan, it probably does not make much difference whether it is well known or not. If, however, it was desired to establish outapiaries a thorough knowledge of the species valuable to the beekeeper would be indispensable in order to select the best locations. With the exception of the standard honey plants the crudest notions are current as to what yields nectar and what does not, and bumblebee flowers, pollen flowers, wind-pollinated flowers, and flowers with minute quantities of nectar, are not infrequently believed to be highly beneficial.

In New England there is no spring, and cold raw days continue up to the middle or last of May, when in a warm season summer makes a sudden advent. The first pollen in quantity is offered by the nectarless alder (*Alnus incana*), one of the commonest (Fig. 1) shrubs, blooming the last of March or early in April. In sheltered ravines I have seen large numbers of honeybees (the only bees then on the wing) gathering the pollen; and in Maine they are fortunate if their labors are not interrupted by a snow storm. Like the alder, the elm, hazel-nut, hickory, oak, etc., are wind-pollinated, and are at times visited by bees for pollen.

But the procession of the honey plants actually begins with the blooming of the willows. There are many species, rich both in pollen and nectar while a month is covered by the succession of bloom. Among the more noteworthy are the pussy willow, the river-bank willow, and several introduced trees, as *Salix alba*. Great companies of wild bees also resort to the willows and carry away a large share of the flower food. I have never heard of a surplus of honey being obtained from the willows in New England; but they are most helpful in tiding over the inclement spring.

The early herbaceous flowers, as the anemones, bluets, violets, etc., are in part wholly nectarless, or in part yield very little nectar. The rare round-leaved yellow violet is attractive to bees, but it is an unusual event to see a bee on a blue violet. Most of the seed of the latter is produced by closed flowers, near the roots, which never open. Whole fields are colored yellow by the dandelion. To my bees it is of more value for pollen than for nectar; but Mr. J. E. Crane, of Middlebury, Vt., writes me that he has had the brood-chambers filled with dandelion honey and that later it was carried above into the supers. It is a dark amber and, well ripened, has not an unpleasant taste suggestive of the flowers.

Both the red or swamp maple and the rock maple yield considerable nectar and are visited by many insects. Large groves of the rock maple occur in Vermont. The red maple has the stamens (Fig. 2) and pistils (Fig. 3) on different trees, and is, I should say, rather the better honey plant of the two. Outside of the fruit trees there are few other trees in New England which are of much value to the beekeeper. The basswood is no longer abundant, and neither is the locust, a short lived tree, attacked by borers. The horse chestnut is a bumblebee flower, and the chestnut is wind-pollinated.

Fruit bloom is a somewhat indefinite term, but I shall use it to include all plants producing edible fruits whether trees or herbs, wild or cultivated. Honey bees visit the apple and pear in large numbers, and are often common when no other insects are visible. Their value as pollinators is beyond calculation, for many apples, pears, plums and cherries are wholly or partially self-sterile. The pear seems to secrete more nectar than the apple; it accumulates in the cup-like receptacle, and in favorable weather is said to overflow and drop to the ground. The plums, especially the Japanese plums, which produce their flowers in immense profusion, are much more frequently visited by solitary bees of the genera *Andrena* and *Halictus* than by honeybees. They contain little nectar. The wild choke cherry is very attractive to insects, and I have seen clouds hovering about the bushes. The raspberry is an excellent honey plant, but the blackberry is of little importance. There is not much nectar in the flowers of the latter, and honeybees do not visit them in large numbers, and when present are usually seeking pollen. For every honeybee there are ten wild bees, and the latter may be easily collected by

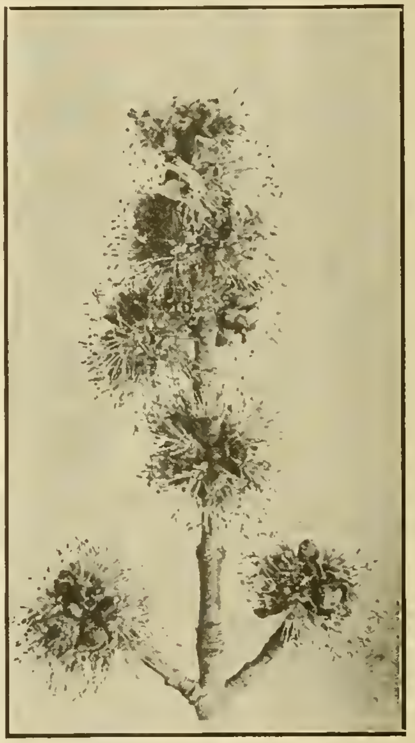


FIG. 2—Red or swamp maple (*Acer rubrum L.*). Staminate flowers; the numerous stamens are clearly shown; the flowers yield nectar and are sweet scented. The flowers appear before the leaves, which indicates that earlier in the history of the species they were wind-pollinated.

the hundred as I know from personal experience. The elderberries are pollen flowers, and are absolutely devoid of nectar; they are visited mostly by flies, and a honeybee might properly be called by an Irishman a *rara avis*. The gooseberries, currants, blueberries and cranberries all yield nectar, and frequently attract honeybees. The gooseberries and currants produce little fruit in the absence of insects. The strawberries tend to have the stamens and pistils in different flowers; the pistillate flowers are of necessity dependent on insects for pollination, while many perfect plants are partly or wholly self-sterile.

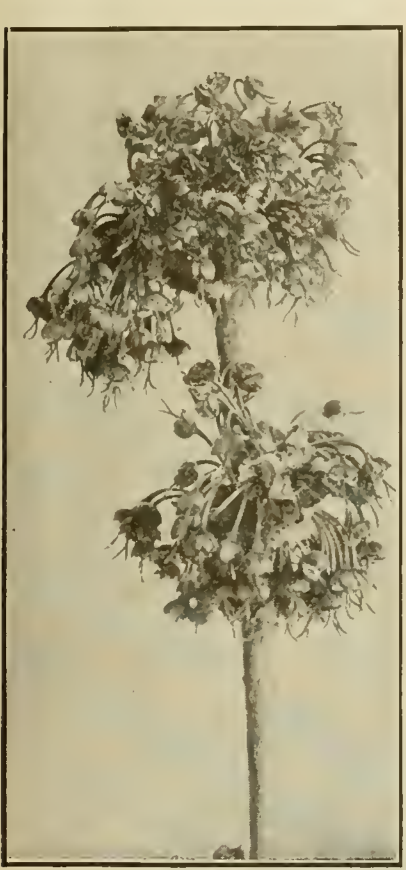


FIG. 3—Red or swamp maple (*Acer rubrum L.*). Pistillate flowers; the stamens and pistils are borne on different trees, but both kinds of flowers secrete nectar.

Since the cucumbers, squashes, melons, etc., have the stamens and pistils in different flowers and the nectar more or less deeply concealed, four words cover the condition—no bees, no fruit. Among the plants producing edible fruits cross-pollination is the rule, many varieties are self-sterile and nearly all are benefited by cross-pollination, pollen from other varieties of the same species being prepotent over own pollen or pollen from the same variety. The structure of the pollen is such that it cannot be carried by the wind.

The early honey flow in New England comes from the clovers, chiefly white and alsike. According to my experience the flow from white clover is very dependable, but the flight of the bees may be greatly hindered by rainy weather, as during the season of 1915. Buckwheat is planted on so small a scale as to be negligible, except perhaps in special instances. Many of the mint family are good bee flowers, but they are seldom abundant. Milkweed, according to Gates, is an important honey plant in Berkshire Co., Mass. The columbines, Tartarian honeysuckle, red clover and gentians are bumblebee flowers. Mustard is common in grain fields; in California, Mendleson states that one year one of his hives gathered exclusively from mustard.

The sumacs occur throughout New England and in certain sections, as the hillside pastures of Connecticut, sometimes afford the beekeeper a startling surprise. The flowers appear in July, and on hot days the nectar flows very freely. Allen Latham says that a strong colony has no trouble in gaining 20 pounds or more in a typical day. In good seasons his colonies store from 40 to 100 pounds each. The honey is a bright yellow color, and has at first a bitter taste, which disappears when it has ripened. He adds that it is safe to say that much of Connecticut would be worthless to beekeepers but for this plant (*Rhus glabra*). The stamens and pistils are on different plants; the staminate flowers are white and the pistillate green.

According to E. H. Shattuck there are thousands of acres in Connecticut devoted to tobacco culture. Tobacco plants were formerly "topped" or cut back, but they are now permitted to bloom and produce myriads of flowers from Aug. 1 to late in September. The bees visit the flowers very eagerly, and a surplus of a hundred pounds to a colony may be obtained. The honey is dark or brownish, but is without a rank odor or taste, and is comparable to buckwheat honey. Where tobacco is raised under cloth it is less accessible than in the open, but there are always numerous openings through which the bees can pass. In August there are in this State few other honey plants in bloom. Apiaries seldom exceed 25 colonies.

In Massachusetts, Gates says that the sweet pepper bush (*Clethra alnifolia*) yields a fair surplus of light colored honey. It is abundant along the eastern coast. Another shrub widely distributed in New England, and a great favorite of insects is the New Jersey tea (*Ceanothus americanus*). Banks has listed 382 visitors (bugs, flies, beetles, wasps and bees) taken on Ceanothus in Virginia, a larger number than has been taken on any other American flower, and I believe, on any other flower in the world.

In pastures throughout New England lambkill (*Kalmia angustifolia*) (Fig. 4) is common, and in western Massachusetts I have seen a hillside covered with mountain laurel (*K. latifolia*). Honey obtained from the flowers of these plants is very commonly believed to be poisonous, but apparently on very insufficient evidence. These shrubs are abundant over large areas, and in the mountains of Carolina the mountain laurel often presents an unbroken sheet of bloom. If the honey were deleterious frequent reports of illness might be expected, but nothing of the sort happens. Kalm, the Swedish traveler, after whom the genus Kalmia is named, says that if domestic animals eat the leaves they fall sick or die, but that they are harmless to wild animals. The belief that the leaves are poisonous seems to have extended to the honey. But Dr. Bigelow states in his Medical Botany that he repeatedly chewed and swallowed a green leaf of the largest size, without perceiving the least effect in consequence. A powder made from leaves recently dried in doses of from 10 to 20 grains produced no perceptible effect. The taste of the leaves is perfectly mild and mucilaginous. Dr. Biglow was inclined to believe that the noxious effect of the leaves on young domestic animals was due to their indigestible quality. The probablity is that the honey is perfectly harmless; the matter should be tested, using, of course, proper caution.

It would seem far more probable that the poison ivy (*Rhus toxicodendron*) and poison dogwood (*Rhus vernix*), both common shrubs in New England, would yield poisonous honey; but so good an authority as Dr. Miller tells us that the honey is excellent and has nothing poisonous about it.

If I were compelled to stake the existence of bee-culture in New England on a single genus of plants I should select the goldenrods. There are many species, and they all yield nectar and pollen. They begin to bloom in midsummer and continue to bloom in October. They are very common, and there are species adapted to the seashore, the fields, the rocks and the woods. I have never known the flow of nectar to fail, and a great quantity

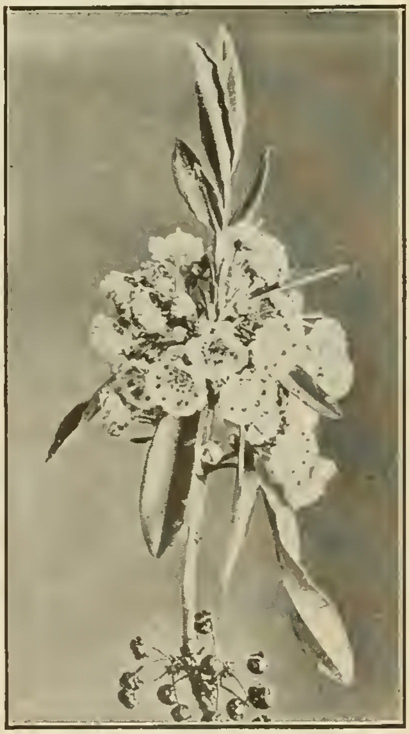


FIG. 4—Sheep laurel or lambkill (*Kalmia angustifolia L.*). Bee flowers; the anthers are held in little pouches in the corolla and the filaments are elastic. A bee in moving around on a flower strikes the stamens, setting free the anthers, which fly quickly upward throwing the pollen on the body of the insect.

of a heavy yellow honey is stored annually. Honeybees show a preference for *Solidago lanceolata*, or according to the 7th edition of Gray's Manual *S. graminifolia*.

The asters are freely visited by bees, but they are not common enough to vie with the goldenrods, neither do they secrete nectar as freely. Properly ripened and sealed aster honey is an excellent winter food, as scores of beekeepers can testify; but if it is gathered so late that it has not time to ripen and is left unsealed it will very likely deteriorate and prove injurious. But I have lost a colony of bees by feeding sugar syrup very late in the fall. It has been suggested that perhaps different species of aster yield very different kinds of honey, but there are no grounds for such a supposition, on the contrary they are much alike just as in the case of the goldenrods.

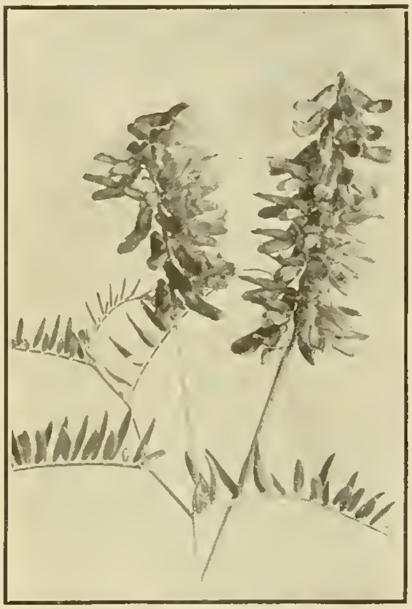


Fig. 5—Purple vetch. Violet-purple bee flowers, common in worn-out fields. The structure of the flower is similar to that of the garden pea. The pollen is placed on the under side of the bee's body. After pollination the flowers bend downward and turn a dark purple.

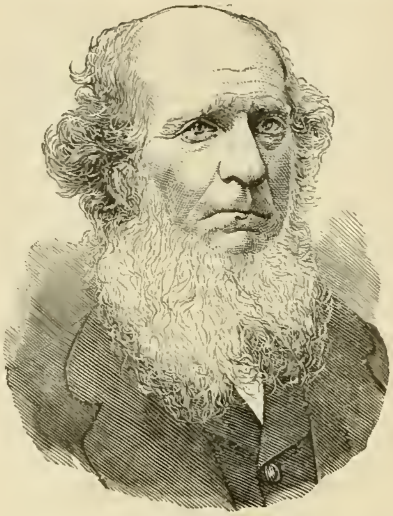
There are many other flowers besides those enumerated, which are more or less helpful to the beekeeper, as the fireweed, thistle, Spanish-needles, thoroughwort and many bee flowers belonging to the pea, mint and figwort families (Fig. 5), but the more important honey plants are believed to have been mentioned. The most promising method of improving the honey flora would seem to be the more general introduction of white sweet clover.

Waldoboro, Maine.

New England Beekeepers

BY J. E. CRANE.

LYONSVILLE, MASS., is a place of unusual interest to New England beekeepers, for here lived the elder Wm. W. Cary some 70 years ago, already an enterprising beekeeper, and here his son W. W. Cary, Jr., still lives. It was here that Rev. L. L. Langstroth, more than 60 years ago, full of ideas and enthusiasm, came to consult the elder Cary as to the value of a movable-comb hive, and doubtless to construct it in his workshop. Certain it is that here the movable-frame Langstroth hive was first used, and the exact spot where it sat is still shown to those interested.



Wm. W. Cary, Sr.

Wm. W. Cary, Sr., went to Flushing, Long Island, in 1860, to care for the first successful importation of Italian bees by Mr. Parsons. A few years later I visited Lyonsville, then known as Coleraine, hoping to meet Mr. Cary, but much to my disappointment he was absent from home. I met, however, his son, then a young man and as enthusiastic over bees as I was, and we "talked bees" until I suspect every one about the premises was disgusted. He showed me some of their choicest queens and told me of their honey resources, so different from my own. He told me of trying to hive a colony of very cross bees and getting stung so severely as to become nearly unconscious, but after an hour or two was able to go at them again and conquer them, after which he was immune to bee poison.

Two or three years ago, at the request of Earl M. Nichols, a son-in-law, I again visited the old place, and found the house and grounds of 50 years ago greatly enlarged and improved, the better to harmonize with Mr. Cary's large heart and hospitable nature. The old cider mill has become an immense vinegar manufacturing plant, one of the largest and most successful in the country.

The rearing of queens and the supply business was looked after by Mr. Nichols, while Mr. Cary was as enthusiastic over fruit growing as he had formerly been over beekeeping or queen-rearing. The thorough manner in which he was preparing the soil for a prospective orchard accounted for much of his success as a business man.

To my mind there is no beekeeper in New England in whom I am more interested than Allen Latham, of Norwichtown, Conn., for many years president of the Connecticut Beekeepers' Association, and to whose efforts much of the prosperity of that institution is due. Of a scientific turn and decidedly original, he rarely follows the beaten road of the crowd, but instead has worked out a method of beekeeping suited to his own needs and surroundings.

Being confined much of the time by his profession as a teacher, he persuades his bees to give up the old and popular way of increase by swarming and to work on contentedly in his "let-alone hive." The surplus he removes at his leisure in midsummer or perhaps not until the Christmas vacation. He makes his increase in small nucleus hives, often wintering them in these same small hives on an amount of honey that is almost unbelievable. He has a

LANGSTROTH

vacation camp on Cape Cod, where there is supposed to be little but a succession of sand dunes, and of course he keeps there a few hives of bees for his amusement, which pay tribute to his skill with a small amount of surplus. He is a typical Yankee. You should visit his garden in late summer. It reminds one of another garden described by a very ancient historian as a place where the Lord "made to grow every tree that is pleasant to the sight and good for food;" only Mr. Latham's garden contains a bewildering profusion of vegetables as well as trees bearing fruit. Better than garden, and better than success in beekeeping, Mr. Latham has a most charming family and delightful home.

Some 30 or 35 years ago Mr. A. E. Manum, of Bristol, Vt., was one of the most pushing and enterprising beekeepers in New England. In addition to a large stock of bees he did quite a business in manufacturing hives and other supplies for beekeepers. There came a particularly good season when basswood gave an unusual flow, and he secured 35,000 or 40,000 pounds of choice section honey. He reasoned that if he could produce such a crop with the stock he then had he could with a much larger stock secure in a few years a fortune, so he began to increase his yards rapidly without much regard to the seasons.

Meanwhile the lumbermen were busy cutting down the basswood for lumber, and by the time he had seven or eight hundred colonies his bee-pasture was ruined and his large stock of bees literally ate him out of house and home. His stock dwindled until he lost interest in them, and before he left for California some years ago his last colony was dead. Mr. Manum was very hospitable, and many are the enjoyable chats or visits I have had with him.

ALLEN LATHAM

He had a rather unusual command of language for one with no greater advantage of education than he had enjoyed. He was of French extraction, and in learning English he seemed to choose his adjectives with unusual care, more so by far than the average person born of English-speaking parents. His swarm-catcher, invented and introduced by him is, I believe, still listed in the catalogs of our large supply houses.

New England as a whole is not an ideal section for beekeeping. This is especially true of Massachusetts. Yet Prof. Burton N. Gates is doing a great work for that State. The Agricultural College at Amherst was, I believe, through the influence of Prof. Gates, the first in the country to give a complete course in beekeeping, with an apiary and a building for laboratory work.

ARTHUR C. MILLER OF RHODE ISLAND

My acquaintance with Prof. Gates has been exceedingly pleasant. He is greatly interested in the uplift of beekeeping, not only in Massachusetts but through the length and breadth of our country.

There are few persons, perhaps, in New England who have spent more time in the careful first hand study of bees than Arthur C. Miller, of Providence, R. I. Confined as he is to his office as a bank cashier much of the day, we can imagine the pleasure he takes with the bees during his leisure hours. He holds a facile pen, and is, when he has the time, a charming writer. While we do not agree with all his conclusions, I count it one of my misfortunes that I have not had the opportunity to become better acquainted with him.

J. E. CRANE

Henry Alley, now deceased, of Wenham, Mass., was for many years an extensive queen-breeder. My acquaintance with him was slight. I do not think he tried to produce honey to any great extent, but confined his efforts to rearing queens. His contributions to bee journals were read with interest. For a number of years he edited the Apiculturist.

Mr. A. W. Yates, of Hartford, Conn., for many years secretary of the Connecticut Beekeepers' Association, is a man of splendid physique and push, and to him perhaps more than any one else are due the wonderful bee and honey exhibits at the Charter Oak Fair, as he has been the superintendent of the exhibit for a number of years.

He is in business in the city of Hartford, yet he finds time to care for two or three yards of bees besides inspection work and the rearing of Italian queens, for which he finds a good demand. He rears his queens from imported stock, believing such to be more satisfactory than queens reared from American mothers.

Mr. Yates, with Messrs, Latham, Coley and Rockwood have, I believe, been the largest exhibitors at the Charter Oak Fair and carried off the largest number of prizes in recent years.

If there is anything I admire in a beekeeper it is the ability to think for himself. Such a beekeeper is Mr. A. W. Darby, of Alburgh, Vt., the extreme northwest corner town of the State. Some years ago European foulbrood came down on him from Canada when much less was known about this disease than at present. Yard after yard among his neighbors with hundreds of colonies were wiped out while he carefully studied it, finding its weakest points, and has practically overcome it and succeeded in securing good crops in spite of it. One of his methods of fighting this disease is never to use a queen reared in a hive where the disease exists as colonies with such queen are sure to prove very susceptible to disease. Another is to rear queens for his use from resistant strains of Italian bees. And yet another is to keep his colonies strong, which he has been pretty successful in doing.

Mr. Darby has worked out methods adapted to his location, and has been producing chunk honey and selling it successfully. One can hardly visit him without getting some new ideas worth carrying away with him.

Mr. E. Clinton Britton, of Canton, Mass., for a number of years president of the Massachusetts Beekeepers' Association, has been very successful in wintering large colonies of bees in his attic, from which he has secured crops of honey from early bloom that have surprised those accustomed only to small colonies wintered in the usual way. He has found and proved quite conclusively that if a colony has the strength it can secure a large amount of honey from fruit bloom.

Mr. Geo. C. Spencer, of Addison, Vt., president of the Vermont Beekeepers' Association, is an extensive farmer in addition to his large yard of bees. A few years ago I found his yard of 100 colonies in bad shape from European foulbrood. Scarcely a healthy colony in the whole lot. He is now on top, and he told me some time since that he found but one colony afflicted with this disease the past summer. This for the encouragement of others who are getting their first taste of it.

R. H. Holmes, of Shoreham, Vt., has been a very successful beekeeper, and has carried off many of the prizes on honey offered by the New England Fair Association. He keeps his shop and honey rooms the tidiest and neatest of any beekeeper I have ever visited. He stores his honey up under a hot roof to ripen before cleaning the sections for market, a most admirable practice as it greatly improves the quality.

Mr. M. F. Cram, of West Brookfield, Vt., living at the geographical center of the State, at an elevation of 2000 feet above sea level, where the seasons are too short to grow corn, has had good success with bees, his main crop being raspberry, with a good early yield of maple and dogberry honey. He was for some years president of the Vermont Beekeepers' Association.

Mr. Chas. A. Monroe, a mail agent on the railroad between Albany, N. Y., and Burlington, Vt., while not a large beekeeper is a good one and has succeeded in keeping his yard free from disease, while all around him yards were going down with European foulbrood. His home is in South Shaftsbury, Vt. His method is to keep only very strong colonies.

Much of the success of our Vermont beekeepers' associations has been due to men like Dr. Frank Bond, of Cornwall, Vt., H. L. Leonard, of Brandon, Vt., G. W. Larabee, of Shoreham, Vt., and others like them.

There are many other most excellent beekeepers in New England if there were room to speak of them.

Middleburry, Vt.

Dean of New England Beekeepers

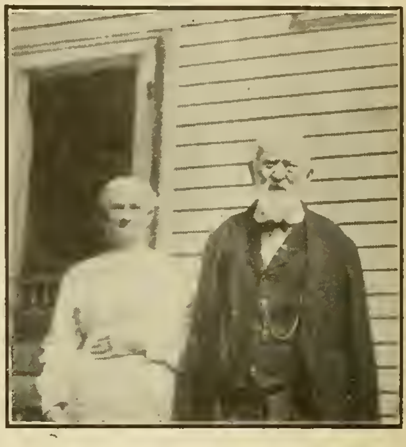
BY BENAJMIN P. SANDS.

I WANT to tell a little about Mr. Joseph H. Chase, our dear old man of Massachusetts, a charter member of the Eastern Massachusetts Society of Beekeepers, organized under the name of the Massachusetts Society of Beekeepers in March, 1906.

Mr. Chase was born in Salem, in our State, received his education in the public schools, learned the trade of cabinet maker, and for many years followed the craft. He has always been interested in fruit, flowers, and bees, has been a beekeeper for 66 years, and has, for the last 40 years, given his entire time to the nursery business and rearing of bees, on his beautiful estate, comprising five acres, on Mt. Vernon Street, in Malden, one of our beautiful suburban cities.

Mr. Chase will be 90 years of age on April 19, is a very much respected citizen, hale and hearty, reads without glasses, attends to his daily work, and his place is kept up to a standard of excellence which is admirable.

He attends regularly our winter meetings which are held the first Saturday afternoon of every month, and always has some new idea of interest for our members, and is a well-known figure at all New England Field Days.



Joseph H. Chase and Wife.

He is the father of six children, five of whom are living. The youngest, Mr. I. N. Chase, 50 years of age, is the proprietor of one of the largest lumber concerns in our city.

Mr. Chase is easily the Dean of New England beekeepers, and our society has arranged to visit him in a body at his home on his coming birthday.

Boston, Mass.

New England Beekeepers' Societies

MISS JOSEPHINE MORSE.

IN preparing this article I was greatly surprised to find that only four of the six New England States boasted beekeepers' societies. These four are Maine, Vermont, Massachusetts and Connecticut.

It would be strange if there were no association in Vermont, since that State probably produces more honey than the balance of New England. The Vermont Beekeepers' Association is the only organization in the State. It meets regularly once a year, and held its 41st annual convention in February.

EXHIBIT OF 25 VARIETIES OF GRAPES RAISED BY JOSEPH H. CHASE

Mr. G. C. Spencer, of Vergennes, is president, and J. E. Crane, of Middlebury, secretary and treasurer. The membership of 40 is but a small proportion of the honey producers of the State. Mr. J. E. Crane tells me that in Addison county alone there are over 3000 colonies of bees.

If Vermont has more bees and produces more honey than the rest of New England, Massachusetts produces more beekeepers' societies. There are six associations flourishing in the old Bay State. The oldest of these is the Worcester County Beekeepers' Association, organized April 14, 1900—the membership then being about 25 beekeepers—all from Worcester county, in accordance with a by-law in the constitution which limited the membership to those residing in the county. This has since been changed and amended so that any one anywhere who is interested in bees can become a member.

In the early days of the association things were "doing" every minute. Meetings were held every month in the year, during the summer at different beekeepers' homes. Sometimes there were as many as 500 present. Also there was the annual banquet supper, always well attended. The society has held three exhibitions in Horticultural Hall, Worcester, devoted entirely to bees, honey, and all that pertains to bee-culture; claimed to be the only such exhibitions ever held in the United States devoted entirely to this subject and not connected with any other exhibition or fair. This association was first to record resolutions in favor of the present very important apiary inspector law. They went on record a year ago in favor of an increase in the appropriation for inspection made by the legislature. At the present time there are 90 listed members. President, O. F. Fuller, Blackstone; secretary and treasury, J. S. Whittemore, Leicester. Meetings are held monthly during the winter with a Field Day in the summer.

EASTERN MASSACHUSETTS FIELD DAY

And speaking of Field Days! Would any beekeeper ever miss one if it was humanly possible to get to it? Judging by the attendance and general spirit of the affairs (to say nothing of strong personal feelings on the subject), *No!*

We go with basket lunches in hand, prepared for pleasure and a real bee-orgy. We meet in some beekeeper's apiary with free opportunity to inspect the owner's pet inventions and contrivances and talk them over. When the inner man begins to demand satisfaction, we sit down on the ground in sociable little groups to eat hard-boiled eggs and ham sandwiches. Usually hot coffee is served, and, *sometimes*, hot biscuits and honey.

Then comes the afternoon program with interesting addresses by men of marked ability. We finally return home, hot and tired, yet wholly satisfied. One of the pictures illustrating this article is of the Field Day held by the Eastern Massachusetts Society of Beekeepers at the home of Mrs. Susan M. Howard, of Stoneham, Mass., in July, 1912. The apiary, as may be seen, was surrounded with buckwheat, at that time in full flower and a beautiful sight. The bees were fairly roaring in it all the morning. Mrs. Howard is shown transferring a colony from an old box-hive into a modern movable-frame hive.

The Eastern Massachusetts Society of Beekeepers was originally organized in 1914 as the Massachusetts Apicultural Society. In 1906 the society reformed as the Massachusetts Society of Beekeepers. In 1913, at the request of the State Inspector of apiaries, the name was changed by unanimous vote of the 70 members present to the Eastern Massachusetts Society of Beekeepers. There are rumors that the name may be changed once more at the March meeting. There are over 100 members who hold seven meetings during the winter, with a fine list of speakers. Thos. J. Hawkins, of Everett, is president, and Benjamin P. Sands, of Brookline, secretary and treasurer. The aim of the society is to solve the problems presented by the members, which it endeavors faithfully to do.

The Massachusetts Society of Beekeepers is an offshoot of the Eastern Massachusetts Society, and was organized May 23, 1914. Frank W. Frisbee, of North Andover, is now president, and Philip S. Crichton, of Boston, secretary and treasurer. They hold meetings the third Saturday in the month in Ford Hall, Boston.

If we look at the map we will see that the beekeepers' societies are very well distributed throughout Massachusetts. Every section of the State, except the Cape and the very southeasternmost part, has its own representative society. The Eastern Massachusetts takes care of the district for quite a way north, south and west of Boston, the German Beekeepers' Club in the northeastern corner is active, the Worcester County Association looks after the wide central strip, the Hampshire, Hampden, Franklin Association, the west central and the Berkshire County Association, all that fine beekeeping country in the extreme western part of the State. So the Massachusetts beekeepers are well looked after, and no one need travel far without finding some organized body of men and women interested in the honeybee.

Two very prominent apicultural authorities, Mr. John L. Byard and Burton N. Gates, Ph.D., of Amherst, are president and secretary respectively of an organization whose official name is the State Beekeepers' Association of Massachusetts, lately formed for the purpose of affiliating the various local societies of the State, its members being delegates from the different State Associations. Its object is not only to bind these societies together but to act as a medium of exchange and cooperation among them.

In Lawrence the German beekeepers have formed into a club, the German Society for the Cultivation of Honey Bees, with Mr. John Uller, of Lawrence, as president, and Mr. Paul Loeffler, of Methuen, secretary and treasurer. A picture of one of their gatherings is printed herewith.

The Hampshire, Hampden, Franklin Beekeepers' Association, organized in 1909, is and has been a thriving society. An annual meeting is held and other meetings periodically at the discretion of the executive committee. The membership has never been large (56 at present), but it is not inactive by any means, and there has always been a surplus in the treasury. The officers elected at the last annual meeting are: President, O. M. Smith, of Florence; secretary and treasurer, Burton N. Gates, of Amherst.

The Berkshire County Beekeepers' Association is presided over by Mr. C. M. Musgrove, of Pittsfield. Mr. John Buckler, also of Pittsfield, is secretary and treasurer.

There is one small organization in Maine, the Aroostook Beekeepers' Association, of which C. I. Spaulding, of Perham, is president, and O. B. Griffin, of Caribou, secretary. As yet there is no State wide organization in Maine.

In Connecticut there seems to be a very wide-awake spirit among the beekeepers, and their society accordingly is very active. The present membership of the Connecticut Beekeepers' Association is 155, and growing. Sherman E. Bunnell, of Winsted, is president, and L. Wayne Adams, of Hartford, secretary and treasurer. Through the efforts of this body one of the best foulbrood laws in the United States, carrying with it an appropriation for inspection work was passed by the 1913 legislature.

In 1915, they secured the installation of an apiary at the Connecticut Agricultural College. The importance of the beekeeping industry is increasing as fruit growers are recognizing the pollenation value of the honeybee. All those who have attended the Connecticut Fair at Charter Oak, Hartford, during the last seven years, and have seen the beautiful exhibit of bees and honey displayed by members of the Connecticut Beekeepers' Association have been filled with admiration and—if fellow beekeepers—with pride. Very liberal premiums ($500) have helped to make this the finest exhibit in the country. Since its beginning the Association has been steadily fulfilling the purpose for which it was created, namely, "The promotion of scientific bee-culture by forming a strong bond of union among beekeepers.

I wish to repeat those words, "a strong bond of union among beekeepers," so they will stay in the reader's mind. For I could not help recalling them when I received a letter from a successful New Hampshire beekeeper to whom I was referred for information. He spoke first of their being no bee societies, then of the decrease of 50 percent in the number of colonies kept on account of "old methods of caring for them, giving foulbrood a chance to deplete and destroy, also lack of State inspection and instruction." The State, as he says, should show more interest and give more aid, but where will you ever find a State which will give interest and aid without being forcefully urged, and a strong desire shown and demand made by organized bodies? Here, certainly, "a strong bond of union among beekeepers" will help to impress the solons of the State with the economic importance of beekeeping interests. The beekeepers cannot lie back and do nothing and expect plums to fall in their laps.

As yet the beekeepers have not cooperated to any extent in Maine, New Hampshire or Rhode Island. Those sufficiently interested in bees to wish to hear more, are obliged to go out of the State to do so. This seems a pity, for there must be plenty of "home talent," if only some one was energetic enough to discover it and start things going. It often takes us New Englanders a long while to get started, but we can anticipate a time when the beekeeping societies of Maine, New Hampshire, and Rhode Island will vie with those of the other New England States.

South Lancaster, Mass.

THE GERMAN BEEKEEPERS' CLUB

* * *

New England Honeys and Honey Markets

BY ALLEN LATHAM.

NEW ENGLAND has possibly a larger variety of honeys than any equal area anywhere else in the United States. This fact is due to the varied soil and climatic conditions in these New England States.

Any white honey is clover honey to the average grocer and buyer in New England (note that I do not say consumer), but New England has several kinds that I should class as white honeys. Clover needs no description here nor does basswood. Both of these honeys we have, also raspberry which is so commonly blended with clover, with us, that few people know one from the other. Then we have clethra, a very white honey, but of rather marked flavor; only a few localities abounding in swamp ground have this latter source of honey.

Our asters produce a very light-colored honey, but like the clethra it has so marked a flavor that only a comparatively few people like it. Some goldenrods produce an almost white honey scarcely to be distinguished from aster honey. The writer believes that sumac honey should be classed as white, for it surely is not amber. This honey probably is in its perfection in southern New England, and it has no superior. It is straw colored, heavy, never candies, is of mild flavor, and meets with keen demand in the market. In a few localities surplus is gathered occasionally from apple bloom. This is also to be classed white, being about the color of pure raspberry honey. Its quality is unsurpassed, but so little gets into the markets that it is negligible.

There are other sources which yield white or very light honeys, but of too slight importance to mention here.

Of our amber honeys, that from blueberry and huckleberry is the most important. This comes late in May and early June. The flow, from one to two weeks, usually about ten days, is rather profuse, and if colonies are full strength from 60 to 100 pounds may be put in. These plants abound in many parts of New England, and but for them beekeeping could not be carried on at all in some localities. Among the swampy regions along the coast, in the drumlin region 30 and 40 miles inland, and over pretty much all the hilly and mountainous parts of New England, this honey plays an important part in our industry.

Blackberry bloom also yields, I believe, an amber honey which is so similar to that just described that the two are scarcely to be distinguished. In some localities the honey from goldenrod is amber, and is so poor in quality that it is worthless for table use. Other sources of amber honey are negligible so far as my knowledge goes.

Buckwheat is grown somewhat in New England, and once in several years yields a bumper crop. I have kept bees over 30 years and can count one big crop from buckwheat. This honey, of course, is beyond the amber shade.

We not infrequently, altogether too frequently, have a flow of honeydew. This is usually a very dark rank honey (?) which can be used by the bakers, but had better be used for spring feeding.

There are, to be sure, many other honeys, but most of them are not well enough known to the writer to speak with assurance of their quality and value. They come blended with the more abundant honeys, occasionally adding value to the eating qualities of the product, but not infrequently injuring it by giving it an off flavor or poor color. One alone I will mention because it does, on occasion, greatly injure a honey crop. In many sections of New England, during the second week of July the bees, for a few days, enjoy a profuse flow of honey. It is yellow, of fine body, but so bitter that it is inedible for months. If kept until well into the winter the bitterness mostly works out and the honey is then rich and paltable.

The New England market calls for more honey than is produced locally. Hence, much honey is imported, especially from the West. Several carloads of California honey go into Boston every year, besides much honey from elsewhere. Almost all of this honey is used by bakers and confectioners, but a great deal is bottled.

The honey taste in New England is very varied. In the country towns and villages only native honeys are easily sold, though bottled honeys, if mild in flavor, sell fairly well. Alfalfa comb honey, white sage comb honey, and even comb honeys from Illinois and New York State do not sell well in the smaller towns of New England. The comb honey of New England is more often than not a blended honey and any foreign honey fails to taste right. Nearly all people buy comb honey for the enjoyment of eating it. If it does not taste as it did "at grandfather's" then it is not pure.

In our manufacturing towns the vast population of foreign born, not knowing the taste of New England honey, buy the western honeys if the retail price is not too high. From these facts I reason that New England is not a good market into which to ship comb honey, but excellent for extracted honey. In this locality, this very winter, Connecticut comb honey brought a dollar more per case than western honey. The grocers preferred to pay the difference rather than load up with a honey which they might have to carry on their hands until they finally sold it at less than cost.

New England doubtless has flowers which yield enough nectar to produce honey enough for all her markets. Unfortunately the business of honey production is too precarious to encourage many to go into it on a large scale. There are rare localities where more than 50 pounds per colony can be counted on. The weather conditions which prevail in New England are most uncertain. Almost every honey flow is doomed to be broken into several pieces by storms of uncertain duration, and there are few years when one does not have to feed more or less for winter.

Norwichtown, Conn.

Advertising at New England Fairs

BY A. W. YATES.

FOR the purpose of advertising honey and its uses, stimulating a larger consumption and creating that favorable impression necessary to its universal use, what better method can be employed than bee and honey exhibits at fairs? Since honey is used much more freely during cold weather, fall is the proper time to do this advertising. Almost all fair associations are willing to allow exhibitors the privilege of selling at the same time, so long as they do not impair their display. Thus the exhibitor is more or less repaid for time and expense incurred and his advertising will be gratis. As an exhibitor, at the Hartford fair since its inception, I have found this method of advertising of no small advantage, assisting in the disposal of about 8000 pounds of honey this season and a considerable number of bees and queens. Being much more interested in the rearing of choice bees and queens than in honey production, my energy is expended largely in that direction, and I know a great many spring orders can be attributed to this source.

As superintendent of this department for the past seven years, I find that it requires a good deal of time, energy, and enthusiasm to keep it up to its high standard, but when the time arrives and everything is set up and in order, and we hear visitors saying, "This is the prettiest place on the grounds," I feel well repaid for the exertion.

We had about 12 tons of honey on exhibit, this past season, of different shades and quality, coming from all sections, of which probably three-fourths was extracted. This with some 40 or 50 colonies of bees in single frame observatory hives, representing different races, drew a crowd of interested sightseers, who were led to think, "How wondrous are His works"!

Several different exhibits of queen-rearing outfits, including cell-cups, cells in different stages under development and mating-hives, with large displays of hives and fixtures, were shown and their uses explained.

The culinary department received its share of attention. The cookies, gingersnaps, cakes, canned fruits and pickles, in which honey was used for sweetening had recipes attached that were copied by many and will encourage a more liberal use of honey in cooking.

Honey sandwiches, a roll with a slice of comb honey inserted, and honey phiz, a concoction of extracted honey, cream and carbonated water, were sold near the entrance of the building, where those passing were invited to try a sample at 5 cents. About 1200 sections, averaging eight sandwiches each, and between 200 and 300 pounds of extracted honey in the drink, were disposed of in this way.

Our building, which is 50x75 feet, is situated near the main entrance where about 150,000 people are obliged to pass in going to and from the grounds. Being occupied solely by "Bees and Honey," it is a distinctive feature of the fair. The large, open windows provide plenty of light and air, and it is lighted at night with hundreds of electric lights and a large electric sign, "Bees and Honey."

But how do we get up such an exhibition as this? There must be some inducement or we could not get this large amount of bees and honey together. The premium list, which foots up to $500 or a little more, is spread out into classes, with three liberal awards to each class, so that each exhibitor does his best to obtain one or more of these, and they long ago found out what the consequences would be if negligent in any way. The competition is very keen, but usually each gets something.

To defray the expenses of the fair committee, which are very light, an entrance fee of 25 cents in each class is imposed. This has thus far been more than sufficient, and the balance has been turned into the treasury of the association.

The largest award last fall, of $153, which was received by the writer, was allotted on the following classes: 1st, Carniolan queen, queens in cages, queen rearing, display of honey, fixtures and sweepstakes. 2d, Golden queen, Caucasian queen, largest collection of different races, 10 sections, one case packed for market, and 24 jars of chunk honey.

Amounts of the awards were:
W. K. Rockwell, $98; Allen Latham, $51; H. W. Coley, $33; C. H. Clark, $39; J. T. Cullen, $8; Wm Ehouse, $17; J. G. Griswold, $39; A. G. Bristol, $16; A. E. Crandall, $6.

The balance of the $500 was awarded to the ladies of the culinary department, and this year as before, whether it was the sweet in the articles themselves or in those that prepared them that influenced the judge in his decisions, I am unprepared to say, but when I noticed his light appetite at dinner afterwards I wondered whether it was

HONEY SANDWICH

BEEKEEPING EXHIBITION HALL AT HARTFORD, CONN.

mind or stomach trouble.

We have made a practice of changing judges each year, securing one that is a stranger to all if possible, and I think it pays, but those that understand this line of work thoroughly and will serve within the price limit are few. We are allowed $25 for this purpose, to cover salary and expenses. Our judge this year was Wheeler D. Wright, of Altamont, N, Y.

The only restriction to entry into this department is that all must be members of the Connecticut Beekeepers' Association, the yearly dues of which are one dollar.

The educational features of such an exhibit, to the honey producer, are valuable; illustrating different styles of jars, manner of putting up, labels, cleanliness, clearness. and body of honey, methods employed for display, etc. Again, a whole week in the company of fellow workers engaged in the same God-given occupation, healthful because it is God-given, to exchange experiences, is better than a vacation taken in any other way.

Hartford, Conn.

YATES QUALITY
OUR TOIL DOTH SWEETEN OTHERS
A.W. YATES
IMPORTER AND BREEDER
OF FINE ITALIAN QUEENS AND BEES
YATES QUALITY
HONEY
40¢ JAR 24 OZ

YATES' EXHIBIT AT HARTFORD FAIR—Photo by Burton N. Gates

Some Things New England Has Done for the Bee World

BY ARTHUR C. MILLER.

THE beekeepers of the rest of North America oft seem inclined to look upon those of New England and their business as of small consequence. Well, there is a lot of comfort in an ample stock of self complacency, but sometimes there is more benefit and profit in looking about and seeing what the other fellows have done and are doing.

It will jolt a lot of the boys to learn how much they are indebted to the beekeepers of little old New England. Here are a few of the things: The first importation of honeybees into the United States, the publication of the first half dozen American bee-books, the movable-comb hive (Langstroth's), the first real system of commercial queen-rearing (Alley's improvement of Quinby's), the baby nucleus and its accessories (Pratt), the sectional outer-case protected hive (Manum's), the hot plate foundation fastener, the steam heated uncapping knife and sundry systems of practice and management now so universal as to excite no curiosity as to their origin or development. There were also many things now obsolete which were the foundation for things now more or less indispensable.

It isn't always the country producing the most of anything that produces the best or gives a thing its fame. "Clover honey," the synonym for the "best," the honey by which all others are measured, got its fame in New England, and today the finest comes from New England and New York. The fame of clover honey was built on a natural blend of clover with a little raspberry, basswood and some of the mints, and it is from places giving that natural blend where the finest "clover honey" is produced today.

New England beekeepers have not only originated and developed apicultural things, but at sundry times have shown the fallacies of widely exploited plans and methods which were costing beekeepers a lot of money.

It does not follow from all the foregoing that the beekeepers of New England have been superior to those of the rest of the country, but that possibly their environment, their closer touch with manufactures, with commerce and more time and facility for study and experiment gave them a broader knowledge and a better perspective than some of their fellows in other sections.

Times have changed, and today other sections of the country are challenging each other as well as New England in the race for progress. And it is well.

I recall, at this moment, the names of a few who have made a greater or lesser mark in the progress of apiculture. Most of them noted for real progress, a few for errors and black marks, but by those tokens arousing others to energy and advance. Of the following, but one is left in the bee-business, and all but two or three are dead:

Thomas, Thatcher, Smith, Packard, Langstroth, Hubbard, Russell, Freyer, Wakefield, Bigelow, the three Carys, Manum, Larrabee, Alley, Kidder, Cotton, Weeks, Mason, Davis Sweet, Pond, Jeffrey. True, Locke, Cushman, Pratt, and Chase, the latter, over 90 years old, still keeps bees and attends the bee-meetings, and on Feb. 5, this year, I heard him give a forceful address, clear and to the point. Cushman is living but out of the business, and Locke and Larrabee, I believe, are alive. All the rest went more or less long ago. Of the others living I will not speak save of one of the greater ones who now makes his home with us and is still actively interested in bees, and that is L. C. Root, of Stamford, Conn. Has not little old New England a record to be proud of?

Providence, R. I.

Beekeeping for Women

BY MRS. HELEN MATHIE.

IN these days when, everywhere, women are asking the question "What can I do to earn money at home?" I wonder that more of them do not turn their attention to beekeeping. The greater part of the work is easily within their strength, and requires attention only for a part of the year. The initial investment need not be large, and the up-keep is not heavy. Once established the hives and working tools will last indefinitly if properly cared for. Even if the bees die out, the outfit is left, and an outlay of a few dollars will start another apiary, presumably with better stock than the bees that died. In a good year the profits for time expended are larger than on almost any work a woman can do.

I say I wonder why, but really I believe I know why after all. Almost all women fear them. Of the apiaries within a radius of several towns only one is owned by a woman other than myself. However, she does not fear them, and when at home works among them. I reason that women fear them because although "crazy about bees" for years before I had any, I could not muster courage to start with them, not knowing anything about them, because I felt sure they would sting me if I went near them. If Providence had not sent a swarm to alight almost on my doorstep I doubt if I should know any more about bees today than I did 20 years ago. That it was a mistaken fear I very soon learned, and it would take some pretty hard knocks of adverse fate to drive me out of the bee-business now.

At the time my first swarm adopted me, my sole actual knowledge of them was the seeing of about a peck basketful of them winged into a hive by a neighbor arrayed in veil and gloves, while the remainder of his family hov-

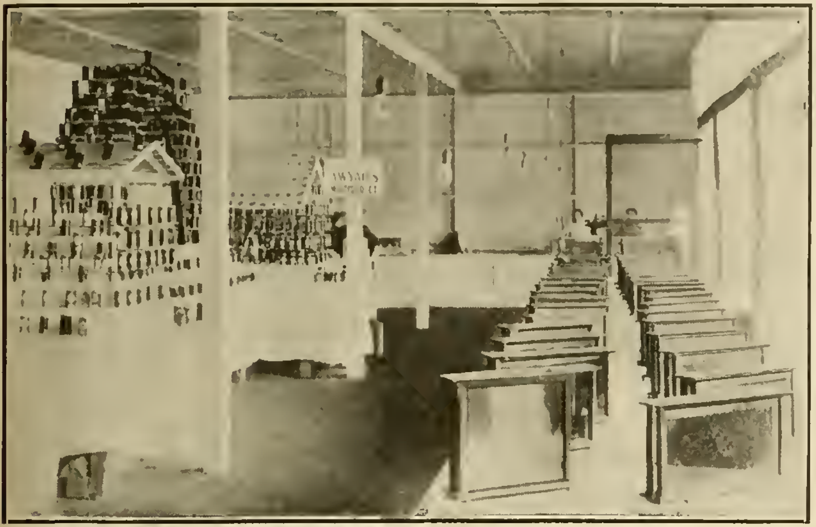


EXHIBIT AT HARTFORD FAIR—ROWS OF BEES SHOWN AT RIGHT

ered at a safe distance as did I. I had heard a great ringing of bells, beating of pans, shouting, and had seen much running to and fro, but I arrived after the excitement was mostly over. The bees, deposited on a white draped table were marching decorously into their new home urged by a man armed with a hen's wing. I had never seen the inside of a hive, and my reading had been confined to newspaper articles unillustrated, so that my knowledge of bees was very slight: however, I was fascinated and eager to learn, but I kept at a safe distance from any hives with bees in them.

When the swarm came to me it was the men folks who were shy, and I had no notion to let them leave me because I had not grit enough to capture them. I sallied forth arrayed in my husband's rain coat and gloves, with my head tied up in the biggest hat veil I had. I seized a box, a table cloth and a wing, and adopting as nearly as I was able my neighbor's tactics I soon had them in a box. The veil was not all that could be desired, and I received stings through it where it was drawn close to my chin, but I was too much engaged to mind about that.

I longed inexpressibly to overhaul the inside of the hive all that summer, but had not the courage, and about Thanksgiving time I had them carried into the cellar where they wintered with the loss of but a small handful of dead bees on the bottom-board. My experience since then has been varied, some good, some bad, but all highly educational. Like most novices, I wanted to try everything I heard of, and some of these trials were not all that could be desired, and I feel sure of one thing, and that is that the honey bee is not subject to any set of ironclad rules, and very frequently overturns the best laid plans and most plausible theories. I am more and more confirmed in this opinion by reading the experience of others as given in the bee journals. The bees frequently upset all calculations. As long as they follow nature's way unchecked it is quite easy to guess what they will do, but when trying to manipulate them to ways of human planning there is frequently another guess coming.

I have not lost my interest in them with familiarity. Indeed, the more I learn about them the more interested I become. I have raised chickens, ducks and geese, taught school, taken boarders, canvassed, raised small fruit, done sewing and fancy work, and I have never found any of these occupations so interesting as beekeeping. There has been but little of the work in which I needed help. The hives are carried in and out of the cellar for me, and if a swarm gets too high some one has to help me get them, but in three years this has happened only once.

To the woman of frail physique I know nothing more healthful, interesting, profitable, and within her power. There are really not more than six weeks or two months of the year when they require much time or labor. By planning to prevent swarming and having a man to carry them in and out of the cellar or pack them for winter, there is little work requiring much strength.

I heartily recommend beekeeping to women wishing to earn money at home in a pleasant easy manner. I notice in picture groups of beekeepers white haired ladies. My own hair is white. Age is no obstacle. Years ago I knew an old lady who had a small apiary. She was small and white haired, and soft voiced. To hear her crooning to her bees, and to see her handling them without harm was a pretty sight, but her grandson could not come within sight of the hives without being chased. Quite evidently they knew their friends from their enemies. No doubt our progressive young women, if they desire, can make a much greater success on a larger scale than we older folk, and we will be glad to have them do so.

Glover, Vt.

Distance Bees Fly After Honey —Smell vs. Sight

BY GEORGE S. WHEELER.

After reading the interesting articles in Gleanings of Dec. 1, by F. M. Baldwin, and of the editors in the American Bee Journal of February on the above subject, I should like to give a little of my experience, as I have been interested in bees for many years.

I had my first swarm in 1856, and have kept bees ever since, both in the North and in Florida. I procured my first Italian queen in 1866, of K. P. Kidder, of Burlington, Vt. Soon after I had some 40 colonies, mostly Italians.

I was very fond of hunting bees, and as no one in my vicinity kept any but the blacks, I had a pretty good chance to line them. If I went north 4 or 5 miles I could find plenty of Italians, and after feeding them they would fly straight for the Wheeler Farm Apiary. When I went in the opposite direction it was the same. These bees certainly could not see the flowers, as my home is among hills and mountains. I have lined bees many times to the west and northwest. There is a mountain which

AMHERST, MASS., AGRICULTURAL COLLEGE IN DISTANCE
Photo by John H. Lovell.

is 1½ miles to the top and probably as much more to the foot on the opposite side. I have caught and lined them more than one mile beyond there and they steer for my apiary, and are gone a long time.

In late fall, when there were no flowers on which to find bees, I have often made what I call a smudge (heating honey and comb), and the bees would come 1½ miles, good looking Italians. Could they see or smell the scent of comb and honey? I have also hunted bees many times in Florida, and I feel sure some of the bees there were more than 2 miles from home. There was a Frenchman called Longo who kept a hundred or more colonies, and I often lined bees that flew in a straight line for his apiary, at least 2 miles from his place. I think perhaps Mr. Baldwin is familiar with the locality I have just mentioned, as it is on the south bank of the Caloosahatchee river, some 2 miles below Alva. I have spent several winters at Owanita, as I have a house and grove there.

Mr. E. R. Root's idea of sight, it seems to me, is a little overdrawn. In my northern home it would be impossible for bees to see over the hills and mountains, but they evidently could smell the fumes of the honey and comb when heated.

I have been interested in the flight of bees for many years, as some queen-breeders have contended their queens would not mix except at only a short distance.

When I first had Italians there were three apiaries in different directions, but none nearer than 1½ miles, and two of them 2 to 3½ miles, and their swarms soon became mixed with Italian blood. If their queens did not meet the drones from my yard, where did the Italian marks come from? No one nearer than 8 or 9 miles had Italians.

New Ipswich, N. H.

[Mr. Wheeler is one of the original subscribers of both the American Bee Journal and Gleanings. He has kept bees since 1856, and a historical sketch of himself was published in the American Bee Journal for Jan. 13, 1898. He is therefore one of the pioneers, and his experience is of value.

There is a difference between the flight of bees for nectar and the flight of the sexes for mating. The drone is stronger of wing than either the worker or the queen. Besides, when the two insects take wing, it is only necessary that each should travel half the distance that separates them in order to mate. So matings at 4 miles would only indicate a probable flight of half that distance for either, though perhaps the male would travel a little more than the queen.—EDITOR.]

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

A Successful South Dakota Beekeeper

I have been a beekeeper since 1910, and also a reader of the American Bee Journal, though at first not a subscriber. Your department has naturally appealed to me most strongly.

Early in the spring of 1910 we ordered two hives of bees from Rapid City to be shipped to our nearest railroad point, Philip, and from there my husband brought them the 40 miles to the ranch on the top of a load of general ranch supplies. The first half day on the road was mid-summer heat, and though he shaded the hives as well as possible, the poor bees must have suffered terribly. Honey ran from one hive. The next morning he started on in the teeth of a bitterly cold northwest wind. When he reached home one hive was a sticky mess, and we brought it into the house to see what I could do with it. It was a pathetic sight. Every bee that still squirmed I bathed and warmed and dried (of course, it seems like a joke now). There were only about a dozen of them that ever crawled again, and though I sought diligently I could find no bee that looked as though it might be a queen. I was anxious to find her to make sure I could tell royalty when I had a chance.

At the time I was in the primer class and had never been anywhere near close enough to a beehive to touch it before. I had studied a bee-book, however, until I knew from pictures what I ought to see. The spring of 1911 I started with 2 hives, 1912 with 5, 1913 with 7, 1914 with 11, 1915 with 15, and this spring I have 30. The first two years I did not get any honey. They were dry years even for this terribly dry country. In 1912 we got 264 pounds of comb honey; in 1913, 450 pounds; in 1914, 1187 pounds of both comb and extracted, and last year 4000 pounds, 450 pounds of it being comb honey. I aim to have only enough comb honey to supply this immediate neighborhood, as a 40 mile freight haul in a lumber wagon over rough and hilly roads is rather hard on the combs.

It is a fine grade of honey, alfalfa and sweet clover, and a case of the comb honey which went in our county exhibit to the State Fair, and it later was entered by our county representative for an individual prize at the Tri-State Fair in Sioux City, carried off the first prize in its class. Of course, we South Dakotans were much pleased that a kind of honey that is universal in this State should be able to carry off honors over white clover and basswood and the other fine honeys there.

The long rough haul that makes comb honey so impossible for us makes glass and tin honey containers expensive also, so our problem was to find a light container that would not be bulky to haul out. That brought us to the Aikin honey bags. We tried them this year for the first time, and think our problems are solved, as our honey candies so quickly. In our cool Septembers it will candy in two weeks and be real hard in a month sometimes. It is beautiful when it is candied, too, and has proven very popular wherever we have offered it.

Our bees were the first that succeeded in this part of the State. They have attracted considerable interest for that reason. We use double-walled hives and winter out-of-doors. My husband and the rest of the men are far too busy with the stock to give me any great amount of help with the bees. Not being able to depend on any strong

TYPICAL SCENE IN THE WILDS OF MAINE—MOOSEHEAD LAKE FROM MT KINO—Photo by John H. Lovell man for assistance, cellar wintering seemed out of the question for me, and we have so far been very successful wintering them right where they are the year around. They are somewhat sheltered by trees and brush; besides, we live in a deep and narrow valley.

Our "success" with bees has inspired several people to go and do likewise. I have sold seven hives of bees so far. They do not all have such favorable situations as we. The first neighbor who tried them took a hive of bees with a new queen home just before the Fourth of July and harvested 50 pounds of comb honey. She was much pleased.

Stores were low in all the hives in spring and I was feeding syrup. My friend telephoned me about her bees. She told me she would put some syrup out. Later she telephoned they would not touch it. By that time my bees had left the syrup, as there were plenty of early spring blossoms down in our valley, so I told her not to worry as probably they were gathering from flowers. A week later she looked through her hive and rushed to the telephone to tell me there was absolutely not a cell full of honey in the hive.

I could scarcely credit it as they are only five miles from us, but out on the flat and not so sheltered, and she said she could not find any flowers either. She decided to put the syrup she still had outdoors for them. The next morning she telephoned me in great excitement, her bees were all dead or dying, some just able to crawl, and some on their backs kicking, and very few still able to cling to the frames. She said she could see some of the cells had syrup in them, and they had about emptied the feeder. The feeding of scorched syrup was the only thing I could think was the cause of the trouble, so I asked her about it. She said, "Oh, dear, no! I took it just as it came from the can, just ordinary store syrup." There was doubtless corn syrup in it. Do you suppose that if the bees were actually starved to it they would eat the corn syrup and die like that?

Mr. Frank F. France described in the American Bee Journal a mating box large enough to hold frames half the size of the ordinary frame. I used the mating boxes last year with frames one-third the size of the regular frame. I would rather have the larger ones. I cannot find them in any catalog I have.

Where are the Aikin bags manufactured? I would like to get them made with my name and address on them with the kind of honey mentioned. I would like a pound size that would be just half the height of the two-pound size instead of being so narrow.

I enclose a small plan to show how I wire frames. The bench is low and I sit on a small stool almost the same height. LISLE W. CHENEY.

Hardingrove, S. Dak.

One would hardly suppose corn syrup so poisonous as actually to kill bees when they are making daily flights, yet there seems no other explanation, and if that is the true explanation think of your neighbor feeding such stuff to her family! Possibly, however, she only got it to feed her bees.

Perhaps you will not find advertised anywhere the small frames you desire, but any manufacturer of bee-supplies ought to make them to order.

Will some one kindly tell us where to obtain the Aikin bags such as desired. Your plan of wiring frames, although not entirely new, is good. Don't you have trouble sometimes with the spool playing too freely? If so, drive a nail at each side, and stretch a rubber band from one to the other.

The proverb says: "A bad promise is better broken," so please break that promise not to write often.

MISCELLANEOUS NEWS ITEMS

Connecticut Meeting.—The Connecticut Beekeepers' Association will hold its annual meeting at the State Capitol, Hartford, April 3. Following is the program:

10:30 a.m.—Reports of officers and committees, election of officers, collection of dues, new business, etc.

"Reminiscences and progress of beekeeping in Connecticut" — Geo. H. Yale. Mr. Yale was third president of the association and presided continually for five years. His address will deal with the early history of our association.

"History of foulbrood in Connecticut"—Stephen J. Griffen.

"Can a woman manage an apiary?" —Mrs. D. R. Bristol.

1:30 p.m.—"Beekeeping in Hungary" —Alexander Luko. Mr. Luko will tell us of the interesting methods and appliances in use in Hungary. He possesses a number of certificates and medals for beekeeping awarded by the government at various competitions.

"Ventilation affecting storing and swarming"—John T. Cullen.

L. WAYNE ADAMS, *Sec.*

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The National Secretary's Report.—At the 46th annual meeting of the National Beekeepers' Association, held at the Sherman House, Chicago, Ill., on Feb. 22, 23, and 24, the delegates present made an effort to place the National on a more stable foundation.

The National has not made much headway during the past few years, and it seems to have receded somewhat from the prominent position it formerly held. The past is gone and it would serve no good purpose to dig up differences which we hope are safely buried. All of the officers did their best, but with a lack of unity progress was impossible.

There is room and need for a National association of beekeepers, and an immense amount of good work can be done by such a body, for the good of beekeepers individually and collectively. Dr. C. C. Miller, fittingly expressed the sentiments of those present, when he said that it would be a pity to see the National break up. The Doctor recalled many profitable conventions in days gone by, and these meetings had been the source of much pleasure in the meeting of brother beekeepers and the exchanging of greetings with one another. I am sure the Doctor's remarks made every one of us feel that the National must live, and now that the Doctor has diagnosed, let us make the prognosis favorable.

The sentiment was strongly expressed that the new officers should avoid commercialism, in the form of selling supplies, etc., and that they should confine themselves to helping the beekeepers along other lines, educational and fraternal, which they thought were just as profitable and more needed by the beekeeper.

With the exception of Mr. E. J. Baxter, of Nauvoo, Ill., a new set of officers were elected as follows:

President—Prof. Francis Jager, University Farm, St. Paul, Minn.

F. ERIC MILLEN
Newly elected Secretary of the National

Vice-President—Dr. W. M. Copenhaver, Helena, Mont.

Secretary-Treasurer—F. Eric Millen, East Lansing, Mich.

These three officers, together with Mr. E. J. Baxter and Mr. E. S. Miller, of Valparaiso, Ind., to act as directors.

E. D. Townsend, editor and owner of the Beekeepers' Review, resigned as director, so that the new officers would feel free to inaugurate new policies without being tied in any way. Those who are personally acquainted with Mr. Townsend know that he has the interests of the beekeepers at heart, and that he would sooner remove himself than oppose any measure that seemed to be for the good of the cause.

While the Review is still the official organ of the National, it is now owned by Mr. Townsend, who dictates its policies.

The National Beekeepers' Association will work under the articles of the constitution as printed in the 1915 December number of the Review.

Membership dues to the association are $1.50, which includes the Review. We cordially invite all beekeepers to join the National Beekeepers' Association, members are eligible whether their State association is affiliated or not. We hope the beekeepers will show their confidence in the officers elected and aid us in building a National that will be a source of pride and a credit to one of the greatest beekeeping countries in the world.

F. Eric Millen.

New Zealand Regulations Concerning Honey.—Honey intended for export from New Zealand must be inspected and graded by an official "grader."

It must be packed in new and clean tins, not weighing over 120 pounds, lacquered or oiled on the outside to prevent rusting. The cases containing it must be also clean and new. The honey *must all be granulated.* Four grades are recognized, and the grade to which each case belongs is stamped on the outside. This grading is done without cost to the producer.

We are informed that this official grading of honey for export has a very decidedly favorable influence upon the sale of honey exported.

A Valuable Manual on Vegetable Growing.—A most interesting book in the "Farm Manual" series to which belongs Frank C. Pellett's book, "Productive Beekeeping," is "Productive Vegetable Growing," by John W. Lloyd, Professor of Olericulture at the University of Illinois, and an authority on the subject.

The first part of the book is given over to a description of various soils, their adaptabilities to certain vegetables and methods of preparation. Other chapters deal with moisture and temperature conditions, selection of seed, hotbeds and greenhouses, insect pests and their eradication, market gardening and truck growing, harvesting, packing and marketing.

By far the most interesting part of the book, however, to the ordinary small gardener, is that part dealing with home vegetables, gardening and the special chapters on the different vegetables. Too many of the best vegetables do not receive the consideration they should in the home garden, owing to the fact that they are not given the proper growing and cultivating conditions. To these matters Mr. Lloyd gives special attention.

A chart giving approximate time to plant both indoors and outside, etc., is included. The book is handsomely bound and well illustrated and contains 340 pages. The price is $1.50, and it can be obtained either direct from the publishers, J. B. Lippincott & Co., of Philadelphia, Pa., or from this office.

Summer Beekeeping Course at the Iowa State College.—A course in beekeeping is to be offered during the first six weeks of the summer session at the Iowa State College. This course will consist of three lectures and recitations a week and three periods of practical work a week for the six weeks. The course will not occupy all the students' time, and they will have an opportunity to take other courses that may be related to apiculture in other departments of the college.

This course is offered in addition to the new four-year course in apiculture which will be offered for the first time at the beginning of the next college year in September, 1916.

It will offer an opportunity for school teachers and beginners to obtain the necessary information for successful beekeeping, and it will offer to the beekeeper the chance to learn the latest and best methods.

Information in regard to this course may be had by writing to the Director of the Summer Session, Iowa State College, Ames, Iowa.

Correction.—In our September issue the address of R. B. Davis was given as Staunton, Iowa, instead of Indiana, in connection with the article on packing in single-walled hives. On page 56, of the February issue, Lewis Winship's address is given as Springfield, N. Y., when it should be Springville, N. Y.

Wisconsin Meeting.—The 37th annual convention of the Wisconsin State Beekeepers' Association was held at Madison Dec. 9 and 10, 1915. The attendance at this convention was the largest in the history of the association, more than 125 being present the afternoon of the first day. The proportion of ladies in attendance was noticeably large.

The following papers were read and discussed:

"Better beekeeping"—F. J. Wells.

"How and why I paint comb foundation with wax"—Edw. Hassinger, Jr.

Under the question box, H. H. Moe questioned the immunity of yellow Italians from European foulbrood. Dr. Phillips responded, asserting their immunity and giving his reasons, based on information and research.

The value of fiber board as a covering for wintering and spring, to act as a non-conductor of heat and an absorbent of moisture, was discussed. It was commended by all who are using it.

The report of the State inspector of apiaries was read.

A talk by F. Kittinger, "Why did the bees crawl out of hives and die?" This matter was discussed at length, but no satisfactory conclusion was reached as to the cause or reason. It appeared, however, that it was something uncommon, having happened to only two or three present, but did not again recur.

Prof. L. V. France, of the University of Minnesota, addressed the convention on the "Recognition of beekeeping by the College of Agriculture of the University of Minnesota."

C. W. Aeppler, in charge of the queen-rearing department at the agricultural college, reported at length. It appeared from his report what was mostly needed for the success of this department, was a more hearty financial support, and hopes were expressed that this department would be better encouraged in this respect for the coming season.

Mr. Aeppler reported that he was unable to fill all orders, owing to several reasons, noticeable two. First, the loss of young queens through cold and wet weather; second, large orders to the extent of 50 queens to one beekeeper. This was discussed, and the consensus of opinion was that as the object of rearing these queens is to furnish new blood and stock to the beekeepers of the State, and obviously not to furnish queens cheap, the supply should be limited to individuals so that each beekeeper should have a chance of securing them. It was suggested to limit the number furnished to one person to ten queens.

Dean Russell, of the Agricultural College, addressed the convention on "State recognition of beekeeping." The address was well received, as it gave us positive assurance that more attention and adequate financial support would be given the beekeeping department with a view of giving it the importance in the Agricultural College that the beekeepers of the State had a right to expect.

Prof. Wilson, Entomologist of the Agricultural College, in charge of the beekeeping department, spoke at length on the work and condition of this department. Prof. Wilson is an enthusiastic practical and scientific beekeeper, who will give this department all the attention and encouragement possible, and the beekeepers were more than pleased with his address.

The following papers also were read and discussed:

"Beginning in extracted honey production"—A. Swahn and Oscar Ritland.

"The agricultural beekeeper"—Henry A. Rather.

"Does beekeeping pay in connection with farming?"—A. L. Kleeber.

The balance of the evening was taken up with stereopticon views by Prof. L. V. France and Dr. Phillips.

The convention convened the next morning at 9:00 o'clock.

"Marketing of honey"—C. P. Dadant, read by the secretary.

"Value of young queens"—N. E. France.

"Selling honey by mail"—E. B. Rosa.

"Outdoor wintering"—Dr. Phillips.

Dr. Phillips paper and the resulting discussion brought out the following facts established by scientific research:

That bees rightly prepared for wintering, with plenty of the best stores, no disturbance, and the right temperature to maintain 57 degrees inside the hive, will come out of the cellar with the slightest possible amount of dead bees, and normally with nearly the same vitality as when put into the cellar; that disturbance and low temperature will cause them to form a compact cluster, generate heat and start brood-rearing; this in turn will cause loss of vitality by exertion and dysentery by consuming too much honey. The older bees will die off, and also many of the younger bees before their time by reason of the abnormal loss of vitality, all of which accounts for so many dead bees on the cellar bottom and spring dwindling of those that are left.

Prof. Norgord, of the Agricultural Society, spoke at length on beekeeping in connection with agricultural pursuits.

On the whole, the convention was honored as never before by the presence before them of the representative men of the University, Agricultural College and Agricultural Society, and of their very evident effort to recognize the Wisconsin State Beekeepers' Association and the general bee-industry of the State as an established factor in the economic industries of Wisconsin.

"Why and how the State of Wisconsin should assist its beekeepers"—W. E. Krause.

Franklin Wilcox, of Mauston, was recommended for the appointment of judge of the Apiarian Exhibit at the State Fair.

Officers for 1916: President, N. E. France, Platteville; vice-president, Mrs. Wm. Haberman, Lodi; secretary, Gus Dittmer, Augusta; treasurer, A. C. Allen, Portage. GUS DITTMER, *Sec.*

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Section Starters

1. Would you advise thin or extra thin foundation for sections?
2. How many pounds of foundation will I need for 800 sections?
3. What size do you cut the top starter?
4. What size the bottom starter?
5. What rig do you have for cutting foundation true? TEXAS.

ANSWERS.—1. I use thin. The bees are more apt to tear down extra thin, especially if no honey is coming in for a few days.

2. I think about 8 pounds.

3. 3⅞ inches wide, and 3¼ deep.

4. 3⅞ by ⅝.

5. I have used different rigs. The one I use mostly consists of a series of parallel bars used as rulers by which to cut with a pocket knife, fully described in "Fifty Years Among the Bees," but the description would take too much space here.

Smoke Method

I wrote to a friend to get a full description of the *smoke method*, which I never saw described in the American Bee Journal since I have read it My friend did not know it. In your next issue would you have a description of the smoke method of introducing queens; it would be of great service to me? MONTANA

ANSWER—You no doubt refer to the plan of Arthur C. Miller, which he prefers to call the *distress* plan, although it might not inappropriately be called the *smoke-distress* plan. It has been given fully in this Journal, but I now give it again in the words of Arthur C. Miller himself, as given in a late number of Gleanings in Bee Culture:

"A queenless colony has the entrance to its hive nearly closed, say all but an inch Into this space a cloud of smoke is blown until the bees roar; then this space is quickly closed. In about a quarter of a minute a queen is run in and the space reclosed. In 10 minutes more the inch space is opened and the bees allowed to ventilate slowly. That is the sum and substance of the method.

"Here are some of the qualifying conditions: First, the hive must be smoke-tight. Open corners, warped covers, cracked floors, etc., are conditions fatal to success with this method. All possible chance of ventilation must be prevented Second, the smoke must be such as to create the greatest distress and the least danger, and that sort of smoke is the thick white choky kind. Third, enough smoke must be driven in to fill the chamber so completely that no bee will fail to feel it. Fourth, the smoke and bees should be confined for 10 or 15 minutes, and then relief given slowly as by opening only an inch of the entrance. If the whole of the entrance is opened at once the bees may pour out in a mass and sometimes the queen with them. They soon quiet down, even with only the inch outlet, and when quiet the entrance may be fully opened."

Clipping—Queens from the South, Etc.

1. Does it affect a queen in clipping her?
2. Is it advisable to buy queens from the South? Is the change too great as far north as I am?
3. How can I transfer bees from hives where combs are built crosswise? I have four colonies and no extra hives.
4. In crossing common bees with Italians, is one good cell enough for every swarm after removing the old queen? I have one Italian colony and three hybrids. MISSOURI.

ANSWERS.—1. No.

2. So far as I know queens from the South do as well as from the North.

3. Wait until the colony swarms, hive the swarm in a proper hive, set it on the old stand with the old hive close beside it, a week later move the old hive to the opposite side of the swarm, two weeks later still break up the old hive, add the bees to the swarm and melt up the old combs.

4. One good cell is just as good as a dozen.

A Boy's Questions

1. What kind of bees would you advise; also beehives and where can they be bought?
2. What kind of bee-stands?
3. What direction should they face?
4. Should I have double-walled hives here in northwest Arkansas?
5. How far apart should the stands be?
6. Should supers be painted?
7. What kind of paint should I use for the hives?
8. What kind of alighting-boards should I have?
9. How many beehives should I have on one stand?
10. What is the difference between the tested and untested queens?
11. Are the Caucasian bees good; if so, where can they be bought?
12. What kind of frames are best?
13. I am working very hard so as to make enough money to take the American Bee Journal. What would be the price for three years of the back numbers?
14. What are nuclei bees?
15. How is the best way to winter bees out-of-doors?
16. Is Arkansas a good honey State?
17. How far apart should apiaries be placed? ARKANSAS.

ANSWERS.—1. The general opinion is that there is no better bee than the 3-banded Italian, such as you already have, although some 3-banders are better than others. The 10-frame dovetailed hive is most generally favored, and the advertisements in the American Bee Journal will tell you where they can be obtained?

2. Cement stands are good. Common drain tile may be used; also bricks. You may also use two pieces of scantling.

3. There is probably not much difference; although it is not generally considered best to have them face north.

4. Probably not.

5. Far enough so that there shall be a space of three feet or so between any hive and the hive on the next stand

6. Paint makes them look better and last longer, although some think it as well to leave them unpainted.

7. Probably nothing is better than the best white paint.

8. There is really no need of any alighting-board other than the extension of the bottom-board in front, although some like to have a board with one end on the ground slanting up to the entrance.

9. Some have only one, but there is advantage in having two standing so close as to be almost touching.

10. An untested queen is one which has been laying more than one to 20 days; a tested queen is one which has been laying three weeks or more, so that it may be seen by her worker progeny that she is purely mated.

11. They are not generally considered as good as Italians, although some think them better. Advertisements will show you where to find them.

12. You can hardly do better than to have the frame most commonly in use, 17⅝x9⅛ inches, outside measure.

13. You can get the back numbers of the American Bee Journal for $1.00 a year. But I strongly advise you to get *first* a good book, such as Dadant's-Langstroth. If I couldn't have both, I'd rather have the book than the back numbers for five or even ten years.

14. A nucleus is a small colony, perhaps one with only bees enough to cover two or three combs, and a bee in a nucleus is just the same as any other bee.

15. It would be too long a story to give all the particulars of the different ways in which bees are wintered outdoors, and this you will get from your bee-book, this department being a sort of supplement to the book, and not expected to tell again the things to be found in any good book on beekeeping. But the main thing is to have the hives sheltered as much as possible from the winds, and to have some kind of packing to help keep the hives warm.

16. Yes.

17. Two miles at least, and more is better.

Queen-Excluders for Extracting

1. I would like to put a queen-excluder on an empty hive above the brood-chamber for extracting with the queen confined below. If it happens that drones are left above, what will they do?

2 I notice Mr. Byron Walker's plan of using an upper entrance in connection with an alighting-board so drones can go out freely. I am pleased with the plan. Why does he use two crates or supers at the bottom? I notice in "A B C of Bee Culture," page 219, in Mr. Walker's picture, he uses two supers at the bottom; that the second hive contains full sheets and brood above INDIANA.

1. If left with no chance for exit, sooner or later the drones will die, and their bodies will be found on the excluder, not whole, but in pieces, for the bees in their attempts to drag them down tear them in pieces, dragging down all pieces small enough, and finally there will be nothing left of each

drone but the shiny thorax.

2 From the picture, Mr. Walker seems to have three stories under the excluder, but no information is given as to what is in them.

Mr. Walker's idea is not merely to have an opening above the excluder through which bees may pass out, but more especially through which they may pass in, so that they may be saved the journey from the lower entrance clear up to the super, and in order to make them enter this upper entrance he places in front of the hive a board slanting at 45 degrees. I don't know just how well this will work, but I should be afraid that the bees would carry into the super pollen that they would leave better below the excluder.

Telescope Cover

Would you consider a telescope cover, 12 inches in depth to allow 3 inches of packing over brood-frames, sufficient protection against cold after removal from cellar in early spring, where we have frequent snow and frost? NOVA SCOTIA.

ANSWER.—Yes; it ought to answer well.

Getting Drawn Combs

1. What is the best way to have foundation drawn to have a supply of drawn comb on hand when needed?

2. Why is the method used by foundation makers to get nearly all the wax out of slumgum better than the small presses sold the beekeeper?

3. Do you have the book called Wax Craft for sale? INDIANA.

ANSWERS.—1. Bees will draw out foundation only as they want to use it to put something into it; and if you want drawn combs that contain nothing, in other words empty combs, you can have them filled in the extracting-super and then extract the honey from them.

2. I don't know very much about it practically, but I do know that I can't do as well as those who do things on a larger scale. I am not sure but in some cases live steam is thrown into the mass. Perhaps, however, the chief thing is that with a small press using a small mass it is not possible to make and keep the materials hot as it is when there is a large mass. If I am wrong in this I am ready to be corrected by Editor Dadant.

3. Cowan's book, Wax Craft, can be had from the office of the American Bee Journal at $1.00.

Metal Covers—Clover, Etc.

1. What is the best for telescope cover, wood or galvanized iron?

2. What is the best for feeding in the spring, diluted sugar or honey?

3. Which one of the sweet clovers is the best? Is there any difference in the color of honey?

4. Which of the clovers is best for hog pasture in southwestern Minnesota?

5. What is in the slough that bees gather honey from?

6. Is it advisable to use the flax board under telescope covers in winter and summer? MINNESOTA.

ANSWERS.—1. The metal seems to be growing in favor.

2. The honey.

3. I don't know that there's any difference in the honey, but the white clover has the advantage over the yellow that it comes later, and so continues after white clover is done.

4. Alsike is good, yet some of the others may be better. Farmers in that neighborhood can tell you better than I. [White or sweet clover is good.—EDITOR.]

5. Maybe heartsease; maybe something else.

6. It is considered an advantage.

Value of Italians, Caucasians, Etc.

1. How much would good Italian bees be worth when the hives they are in are so poor that they would have to be transferred?

2. I see in the American Bee Journal where a man moved the hive a little and put another with a frame of brood and the queen in its place and let the field workers go into that one to prevent swarming. Do you think it would work?

3. What do you think of the Caucasian bee as a honey producer?

4. What do you think of buying bees by the pound? NEW YORK.

ANSWERS.—1. The price of bees varies very much. In some places you can get a colony of bees in a good hive for $5.00, while in others it may increase from that up to $10 or more. To find the value of a colony such as you describe, it would probably be a fair thing to find the cost of a good colony in a good hive, and then from that deduct about a dollar more than the cost of a new hive without any bees.

2. It will work satisfactorily if at the time of making the change half, or more than half, the bees are brushed from the combs taken away, leaving with the brood only enough bees to keep it from chilling.

3 Some prefer them to all others, while most beekeepers prefer Italians.

4. It is likely to be quite a step in advance, since they can be thus sent by express at much less expense than when shipped on combs.

Entrance Guards

If an entrance guard be placed on a hive in the early spring and kept on all summer what would be the result? When they swarmed what would become of the queen? KANSAS.

ANSWER.—To keep an entrance guard on a hive all summer would be quite likely to court disaster. It would lessen ventilation to some extent. Drones could not get out and would die in the hive. In most cases the colony would swarm, and the queen not going with them the swarm would return, although it is possible it might unite with some other swarm or go to some other hive. This swarming might continue for several days; then a young queen would emerge, and in a few days would be the only queen in the hive. Not being able to fly out to meet a drone she would produce only drones, if indeed she laid at all. The colony would finish its existence by the death of the last worker in a little more than two months after the death of the old queen, unless robbers completed the job much before that.

Uniting—Granulation, Etc.

1. I have 80 colonies in the cellar doing well so far. I have some of Dadant's bees I want to breed from; they are pure marked Italians. I will let these swarm and use the small swarms to Italianize my hybrids in the fall, paper plan. Tell me how long to leave them on top, how to get bees and queen down, and what to do with the brood-combs if there are any?

2. I run for extracted honey and have combs and foundation. I do not want to increase my hybrids, as I want the hives heavy for winter and all the comb honey I can get. Bees swarm here about June 1. I have scarcely any tame fruit bloom, but some wild fruit bloom before clover, and seldom any buckwheat. I have read of putting queens down on one brood-comb and a wire screen and queen-excluder between them. Please tell me when to put the excluder on and in how many days to take the screen out and when to cut out queen-cells?

3. I want to know how to manage a colony when it swarms, as I want no increase from my hybrids, but want the hives heavy in the fall and full of supers?

4. Will honey extracted from combs three-fourths capped granulate quicker than from combs fully capped? My clover honey granulates very soon after I extract it in the honey house?

5. I have a ½-inch hole in the cover with a cork in it, and when the temperature is up to 90 degrees I take the cork out for ventilation. Would you recommend it open in winter in the cellar? ONTARIO.

ANSWERS.—1. You will kill the queen that you want to replace, and at the same time put newspaper over the hive and set over it the hive with the better queen. In five to seven days the bees will be thoroughly united, when you can take away the upper story, although it will do no harm if you leave it untouched for two weeks or more. You will leave in the lower story the best frames from both stories, and if you have no use for the combs you take away you can keep them over winter to be used the next summer for swarms or any other way you like, looking out that mice don't get at them.

As you want to have your colonies supplied with queens of the better stock it may do no harm to suggest another way that you might like. Take brood from colonies with poorer queens and give to colonies with best queens, making these last strong so that they will swarm first. For instance, suppose colony A has one of your best queens, and B, C, and D have poorer queens. Strengthen A by giving it sealed brood from the others, so it will swarm first. When A swarms, hive the swarm and set it on the old stand, taking the old hive away and putting it on the stand of B, and setting B on some new stand. The field bees of B will unite with A, making A strong, and in something like a week or more it will swarm. When it does, do as you did before, setting the swarm in place of A, only this time set A in place of C, setting C in a new place. Perhaps two days later A will swarm again, when you will set the swarm in place of A, setting A in place of D, and setting D in a new place. Thus you have improved queens in the hives that took the places of all the hives you have moved, and later on, if you wish, you can kill any of the old queens and unite.

2. What you purpose to follow is the Demaree plan. You will operate just before you think there is danger of the bees swarming. If you want to take a little more pains, you can look for queen-cells once a week or ten days, and operate as soon as you find cells. No screen is used, just the queen-excluder, the queen and one brood-comb being left in the story under the excluder, and the hive filled up with frames filled with foundation. Eight or ten days later destroy any cells that may be found over the excluder.

3. Kill the old queen and destroy all queen-cells but one. Or, kill the old queen and leave the cells. Then, beginning a week later, go every evening after bees stop flying, put your ear to the hive and listen to hear a young queen piping. When you hear this, go next morning and destroy *all* queen-cells. Pay no attention to the queen, she is free in the hive and will take care of herself.

4. The honey in combs only partly sealed is likely to granulate before that which is more thoroughly ripened and all sealed.

5. The ventilation is good both summer and winter, and it would be no harm to have two or three times as much.

When Does Alfalfa Yield Honey?

Does alfalfa yield honey the first year? ILLINOIS.

ANSWER.—No, nor the tenth year in your locality. At least alfalfa has never yielded to amount to anything in my locality, and I am within 25 miles of you. As a rule it yields no honey east of the Mississippi. Where it does yield, I *think* it is not until the second year.

Extracting Wax

I would like to know how to get wax out of old comb in some clean easy way. I have a lot of it, and have spoiled some in boiling the comb to get the wax out. I will be glad if you will tell me some way. NEW YORK.

ANSWER.—I suspect that you have no book on beekeeping, and I strongly advise you to get one. I feel pretty sure you will say it is worth five times its cost. In that you will find answers to most of the questions you would like to ask. I am always glad to re-receive questions about things not entirely clear in the books, and this department is meant to fit just such cases. As to the matter of wax, I have had a good deal of experience on a small scale, and the very best thing I know is to send the old combs and scraps to those who advertise that they melt up such material and get out the wax. It is quite a saving, for they get out more wax than I possibly can.

[The only absolutely indispensable requirements in rendering combs into wax are to use plenty of rain water with the combs, in a tin boiler and dip the melted wax out through a screen pocket with a ladle, as it comes to the surface, and not let it overboil or run over. But the experience of the past indicates that those who make a business of it can save you some money, as they get enough more wax out of it to make it profitable to both.—C. P. D.]

Increase by Division

1. I have a single colony and would like to make some increase, say two colonies out of the one and get some surplus. In order to do this would it be best to divide early or wait until the main flow is over and feed if necessary?

2. Doesn't opening the hives once a week to look for indications of swarming, etc., as advised in the books, greatly interfere with the work of the bees?

3. In one part of your book you say that sections are removed as soon as completed, and on another page the statement is made that you sometimes have six or seven supers on at a time. Which is the better way?

4. You say that you do away with all queens that are not good. Is there any other way of telling other than tearing open the hives frequently, if she *is* good or not?

5. In making a single frame observation hive what should be the inside width between the two sheets of glass?

6. During last summer I sometimes noticed two bees tumbling out of the hive, tightly locked together. They would roll down the inclined entrance board to the ground, and after strugling for a while would sometimes fly off together while clinched. Was this robbing? There is no other bee-yard within two miles.

7. In Gleanings for April 15, 1914, you say that you had seven or eight swarms, but that they were not hived as such. What was done with these swarms?

8. Since I cannot be with my bees every day, shook swarming would, I presume, be my only plan to control swarming, and as a swarm may issue anyhow, in spite of the preventive methods tried, the books say that if this happens the old colony should be set on a new stand if increase is desired, and given a queen or ripe queen-cell. Now what becomes of the queen-cells that were built in the old colony when it swarmed?

9. In Gleanings for April 15, 1915, page 338, you say "put the empty 8-frame bodies on top." In the American Bee Journal for January, 1915, page 30, you say "always put the second story below." Which way is better?

10. My hives are 10 frames. Could I work your plan of building up the bees by using shallow or half story bodies to give the queen more room in the same way that you use full depth 8-frame bodies? Would it be better to use regular hive bodies?

PENNSYLVANIA.

ANSWERS —Before answering any of your questions I want to say that it is refreshing to meet a man who has more bee-books as well as more bee-journals than he has colonies of bees. The man who thinks he can keep bees without having any book of instruction is saving at the spigot and wasting at the bung-hole. It will always be a pleasure to receive questions from you. Now for your questions.

1. In your case it would probably be as well to make the division just before danger of swarming, perhaps by the plan that later on you call shook-swarming (only please don't call it by that name unless you favor saying, "I have took more honey than was took by my neighbor." Shake or shaken is better English, and you're not in the habit of using bad English). If you wait until the flow is over you are likely to have too much trouble with the bees trying to swarm. It might be a good plan for you to set the hive with the rest of the brood close beside it, then a week later remove the latter to a new stand. That would probably give you more surplus and still allow both colonies to be in good shape for winter.

2. I don't think it interferes much, certainly not enough to overbalance the advantage, and yet it does no good to open a hive unless there is some reason for it.

3. Both are good, and both happen at the same time. A hive may have on it three to seven supers of sections, some of them containing very little honey and from that up to being filled and yet a number of sections unsealed. As soon as any one of the supers has its sections completed the super is removed. Indeed, generally the super is removed while the sections at the four corners are not yet completed.

4. Generally you will not—indeed, generally you cannot—judge as to the value of a queen by opening the hive and examining. You can hardly judge in ordinary cases until the close of the season, when the queen has done a full season's work. Then she will be considered good or bad according as her colony has stored above or below the average amount of surplus.

5. I don't know what is the generally accepted distance between the two panes of glass, but from my experience with nucleus hives having only one frame, I should judge it might be two inches or a trifle more. With less than that the bees are more likely to swarm out. A less distance is likely to make less trouble with bits of comb built where not wanted, but it is no great trouble to clean out such bits from time to time.

6. You may feel certain that one of those bees was trying to rob. It could easily come two miles. It is just possible, too, that bees might be nearer than two miles without you knowing it.

7. The queen being clipped could not go with the swarm, and so the swarm returned to the hive, and then the colony was treated in one of the ways described in "Fifty Years Among the Bees."

8. What becomes of the queen-cells after a colony has swarmed and is removed to a new stand depends somewhat on the time when the removal is made. If moved at the time of swarming or very shortly thereafter, it is possible that the first virgin emerging will be allowed to kill all her royal sisters in their cradles, and it is also possible that one or more afterwards will issue before all cells are destroyed. If, however, the swarm be set on the old stand with the old hive set on a new stand a week later, it is almost certain that there will be no more swarming, all the cells after the first being destroyed. If the beekeeper wants to give a queen or a ripe cell, he must make it his business to destroy first all cells in the hive.

9. I have spent no little time looking over and over again page 338, to which you refer in Gleanings, but cannot find what you quote. There may have been some special case in which it would be advisable to "put the empty 8-frame bodies on top," but in the case quoted from American Bee Journal, I should put them below. (Last year I put them on top *because a more lazy way*, but not so good a way.) Kindly give me the exact place to find what you quote in Gleanings, and I think I can explain that there is no conflict, although I do not by any means claim that I am always consistent.

10. I think the shallow stories would work just as well as the deeper ones.

Transferring Bees from an Old Box-Hive

I have a good colony of bees in an old box-hive. I never transferred any or ever saw it done. I am rather afraid to start the job. If I put a good hive above or below, do you think the queen would go into the new hive to lay her eggs as the old box-hive is not very large? ILLINOIS.

ANSWER.—Yes, when the old quarters become too cramped the bees will work up into a new hive placed over, and still better into one placed under. Another way you can do is to wait until the bees swarm, hive the swarm into a proper hive, set the swarm on the old stand with the old hive close beside it, a week later move the old hive to the other side of the new one, and then two weeks later still, at which time all the worker-brood will have emerged, break up the old hive, adding the bees to the swarm and melting up the old combs.

Transferring Bees into Standard 10-Frame Hives

I have seven colonies of bees in soap boxes and home-made hives no two alike as to size, etc. Kindly give me instructions as to the best way to transfer them into standard dovetailed 10-frame hives that I have. When will be the best time to do this, and what will I do for starters in the new hives?

ARKANSAS.

ANSWER.—Wait until the colony swarms and hive the swarm in one of your up-to date hives. Set the swarm on the old stand that the old hive occupied, and set the old hive close beside it. A week later jump the old hive over to the other side of the swarm. Two weeks later still, when all the worker-brood will have emerged, break up the old hive, add the bees to the swarm, and melt up the old combs. You can fasten starters of foundation in the frames, but it will be much better to fill the frames with full sheets of foundation.

Drone-Comb in Sections

In as much as a given area of drone-comb will store the same amount of honey as a like area of worker-comb, and as less wax and therefore work is required to construct the drone-comb, why is not all super foundation for use in sections, drone foundation, instead of worker? NEW YORK?

ANSWER.—I don't know for certain, but I think some doubt has been thrown upon the belief that drone-comb takes less wax than worker-comb. However, even if it should take less, the gain in that direction could not be enough to counterbalance the objections. It goes without saying that no drone-comb is wanted in the brood-nest, although some favor a little there. Probably, however, no one wants as much of it in the brood-chamber as the bees would have there if left to their own devices. If there is not as much in the brood-chamber as the bees like, then they prepare for eggs any drone-comb found in the super, or build drone-comb in any vacancy found there, and the queen goes up and lays there. Unless one wants the trouble and expense of using queen-excluders, the only thing is to have worker-foundation in the super, and to have each section *filled* with it.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

Finest Italian Queens. Send for booklet. Jay Smith, 1159 DeWolfe St., Vincennes, Ind.

Phelps' Golden Italian Queens will please you.

Tell several thousand people what you have for sale with a few words in this department.

Bees and Queens from my New Jersey apiary. J. H. M. Cook,
1Atf 70 Cortland St., New York City.

Wanted—To buy a few colonies of Italian bees. F. C. Bennett, Jamestown, N. Dak.

Vigorous Prolific Italian Queens, $1.00 each; 6 for $5.00. June 1st. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

Northern Bred Italians. "Nutmeg" strain Circular. A. W. Yates,
3 Chapman St., Hartford, Conn.

Phelps' Golden Italian Bees are hustlers

Queens from the Penn Co. See our large ad. elsewhere in this Journal.

Will trade fine, young Italian queens for first-class brood-combs, wired, in Hoffman frames. C. S. Engle, Beeville, Texas.

For Sale—Leather-colored Italian bees by pound. Queens and nuclei a specialty. Write to C. H. Cobb, Belleville, Ark.

Italian Queens that produce hustlers. Nuclei and pound packages.
A. E. Crandall & Son, Berlin, Conn.

Doolittle & Clark's Italian breeding queens will be ready for delivery May 1, Prices, $10, $5 00, and $2.50. Marietta, N Y.

Ready now 1-lb. 3-band Italian bees with queen, $1.65. 2-fr. nuclei with queen, $2.25. Rosedale Apiaries. J. B. Marshall,
Big Bend, La.

Bee-Keeper, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

Indianola Apiary offers bees and queens for sale. Untested, 75c. Tested, $1.25. Bees in 1-lb. packages, $1 00; 1-frame nucleus, $1.25. Add price of queen if wanted.
J. Warren Sherman, Valdosta, Ga.

Queens of Quality—The genuine "quality" kind of dark Italians bred for business. Guaranteed to please or your money back. Circular free. J. I. Banks,
Dowelltown, Tenn.

For Sale—Bright Italian queens at 75 cts. each; $7.50 per dozen or $60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed. W. W Talley,
Rt. 4, Greenville, Ala.

Quirin's superior northern-bred Italian bees and queens are hardy, and will please you. More than 20 years a breeder. Orders booked now. Free circular. Honeydew for bee food, 5c a lb. H. G. Quirin, Bellevue, O.

For Sale—In order to make room for early cells we are offering select tested queens for $1.00 each if taken by April 15th. These are young queens and were reared late last fall. M. C. Berry & Co., Hayneville, Ala.

A Limited number of new colonies three-banded Italians in nearly new eight-frame hives, $6 50 each. This includes one super. Strawberry bed, postpaid, $1.00.
Cherry Grove Fruit Farm, Dows, Iowa.

For Sale—Bright Italian queens this season, 75c each; $8 00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

Queens, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C, Clemons, Boyd, Ky.

For Sale—Three-banded Italian queens. Nuclei a specialty. Bees by the pound. My stock will please you as it has others. Let me book your order for spring delivery. Write for circular and price list.
J. L. Leath, Corinth, Miss.

Bees Wanted—20 10-fr. Lang. hives, telescope covers, with Italians or Carniolans, from the closest distance. Inquirer must state price. S. H.,
2942 Russell Ave. No , Minneapolis, Minn.

We Want to tell you about our bees, quote our prices on queens and bees by the pound and let you know the express rate from Brady to your station. Let us hear from you. R. V. & M. C. Stearns, Brady, Tex.

An established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

Three-Banded Italians ready May and June, $1 00 each; 6 for $5.00; 12 for $9.00; after June, 75c each; 6 for $4.25; 12 for $8.00. For larger lots write Curd Walker, Jellico, Tenn.

For Sale—Golden Italian Queens and Nuclei about June 1st. Send for price list.
J. I. Danielson, Fairfield, Iowa,

Queens from my honey-gathering strains will be ready to ship April 1st. In honey-getting qualities they have few equals. See my advertisement elsewhere in this Journal. D. E. Brothers, Attalla, Ala.

For Sale—Golden Italian queens about the first of May. Untested, 70c; $8.00 dozen. Select untested, 80c; $9.00 a doz. Tested,$,100. Select tested, $1 25. No foulbrood in my apiary. D. T. Gaster, Rt. 2, Randleman, N. C.

Carniolan, golden, and 3-banded Italian queens. Tested, $1.00. Untested, 75c; 6, $4.20; 12, $7.80. ½-lb bees, 75c; 1-lb. $1.25. Nuclei, per frame, $1.25. No disease; everything guaranteed. Write for prite list.
C. B. Bankston, Buffalo, Leon Co , Tex.

Gray Caucasians—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1 00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. H. W. Fulmer, Andalusia, Pa.

Having secured breeders of Dr. Miller, we are offering daughters of his famous strain of Italians at the low price of $1.50 each. Queens of our own strain at 75c each. One pound bees, $1.50; 2-frame nuclei, $2.25. Full colony in 8-frame hive at $6.50; 10-frame, $7.50; 200 colonies for spring delivery at $6.00 each, 10-fr. hives. The Stover Apiaries,
Mayhew, Miss.

For Sale—Good Italian queens, untested, 75c; tested, $1.00; nuclei, 2-frame, $3.00; 1-lb. package, $2.00; 2-lb. package, $3 00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1004 Park Ave., Little Rock, Ark.

If You wish to get early queens and combless packages place your orders early with the Marchant Bros., Union Springs, Ala. See our ad elsewhere in this Journal.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

Golden and leather-colored Italians; 32 years' experience as honey producer and queen-breeder. Prices; Select untested, 1 queen, $1.00; 6, $4.00; 12, $7.25. Tested, 1, $1 50; 12, $15. Make P. O. orders payable to Blythe, Money returned for any queens not satisfactory. B J. Cole,
Fertilla, Riverside Co., Calif.

Bees and Queens — Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey gatherers. We breed this stock only. Untested queens 75c each; $8.00 per dozen; $60 per hundred. Tested queens, $1.25 each; $12 per dozen; $85 per hundred. Three frame nuclei, $2.25 each; $200 per hundred. Bees ½-lb. pkgs., 75c each; $60 per hundred; 1 lb. pkgs., $1.00 each, $85 per hundred. Add price of queens to above pkgs. Complete catalog free on application Spencer Apiaries Co.,
Nordhoff, Calif.

Italian Queens, prompt service; queens mailed to purchaser in new style of introducing cage that is safe and sure. Bees from a one-frame nucleus to a carload. Write for price list on colonies, queens and nuclei. J. F. Diemer, Rt 3, Liberty, Mo.

Queens — Early Queens, Golden or Leather-Colored Italians, one select untested, $1.00; 6, $4 25; 12, $8.00. Tested, $1.25. Best breeder, $5.00. Early Swarms of Young Bees in light screen cage a specialty. One 1-lb. package, $1 25; one 2-lb., $2.25, queen extra. For ten or more write for price; also nuclei and full colonies. Orders booked now for bees and queens, both ready for delivery March 15 and after. Safe arrival, prompt service and satisfaction guaranteed. Circular free. J. E. Wing,
155 Schiele Ave., San Jose, Calif.

Carniolan, Golden and Three-Banded Italian queens from April to October. Tested, $1.00 each; 6, $5 40; 12, $10.20. Select tested $1.25 each; 12, $13.80. Untested, 75c each; 6, $4.20; 12, $7.80. Select untested, 85c each; 6, $4.80; 12, $9.00. Breeders, $3.00 to $5.00, Virgins, 50c each; 6, $2.50; 12, $4 00. Bees, 1-lb., $1.25; 2 lbs. $2.25; ½ lb., 75c. Nuclei, 1 frame, $1.25; 2 frames, $2.25; 3 fr., $3.00. Full colonies with tested queens, 8 fr., $6.50; 10 frame, $7.00. No disease, safe delivery and satisfaction guaranteed. Money must accompany the order. Write for price list.
I. N. Bankston, Buffalo, Tex.

SITUATIONS.

Wanted an expert bee man at once to help in season of 1916. 1100 colonies. Good wages to right man. J. E. Hanks,
Hagerman, Idaho.

Wanted—Man with some experience to take care of 150 colonies of bees for 1916. Who, if conditions suit him, buy bees or take them on shares for 1917. German with some experience in farming preferred. Give all particulars in first letter.
Chas. Bentrup, Deerfield, Kans.

Deputy Inspectors—On May 6, 1916, examinations will be held to provide an eligible list of deputy bee inspectors for the State of Illinois, the salary of whom is $4 00 per day. For further particulars address W. R. Robinson, Secretary State Civil Service Commission, Springfield, Ill.

HONEY AND BEESWAX

Wanted—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

Best flavor alfalfa sweet clover honey at a very reasonable price. Ask for delivered price on 2 60-lb. cans or more.
Wesley Foster, Boulder, Colo.

For Sale—Extra good light amber mesquite and alfalfa honey. Two 60-pound cans to case, 5c a pound; 5 and 10 pound friction-top pails, 8c per pound per hundred weight. Cash with order on board of cars here.
B. A. Hadsell, Buckeye, Ariz,

For Sale—10,000 pounds amber honey in 60-lb. cans or friction-top pails. Best quality; prices right; sample.
E. S. Miller, Valparaiso, Ind,

For Sale—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

FOR SALE

For Sale—Friction-top pails, 5-lb. size, per 100, $4.50; 500, $21.25; 10-lb. size per 100, $6.25; 500, $30. Low prices on other sizes in bulk. Also furnished in re-shipping cases. Shipped from Chicago.
A. G. Woodman Co., Grand Rapids, Mich.

For Sale—200 colonies of bees, 5 acres of land. N. L. Andersen, Spearfish, S. Dak.

For Sale or to let on shares 250 well kept colonies, in irrigated alfalfa region (Kansas); season 1914 averaged 110 pounds. Address, C. O. Davison, Presby. Hosp., Pittsburg, Pa.

See our large ad elsewhere in this Journal. On bees in packages we will express on lots of five or more packages to points east of the Dakota, Nebraska, Colorado and Texas lines, south of the Canadian boundary. Prompt delivery guaranteed.
M. C. Berry & Co., Hayneville, Ala.

For Sale—170 colonies of bees equipped for extracting in 2 apiaries one mile apart, in an alfalfa belt three miles from Fallon, Nev., in the heart of the Carson-Truckee U. S. Government Reclamation project. For particulars, address Gillman H. Wright,
R. F. D. No. 1, Fallon, Nev.

For Sale—150 Alexander feeders, 12c each, used one season. $16 cider mill, $8.00. 800 wire moving screens, strong frame, 600-8 fr., 4c; 200-10 fr., 5c. 4-90 gal. honey tanks, used one season, $6.00 each. 4 fr. Root automatic reversible extractor, $12.50. New $70 Reflex camera, $55. An Eastman 4x5, 18 in. bellows, cost $32, $15. 100 8-fr. hive bodies, painted, frames wired, 50c each. 200 new zinc queen excluders, 20c each. Empty 60-lb. cans, 2 in a case, 40c each. Will sell for cash or will trade for honey, or bees in two-pound packages. Wesley Foster, Boulder, Colo.

HONEY LABELS

Honey Labels that create a favorable impression on the buyer. Dealers admire them and give them prominence. Catalog Free.
Liberty Pub.Co., Sta.D,Box 4H. Cleveland, O.

SUPPLIES.

Hoffman self spacing frames in flat, 100, $3.00; 500, $13.75; 1000, $27.
Sivelevetts Frame Works, Whitneyville, Ct.

Do You want the best foundation fastener? Then buy "The Pangburn," price $1.75, postpaid, mfg. by W. S. Pangburn,
Center Junction, Iowa.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

Good second hand 60-pound cans, 25c per case of two cans f. o b. Cincinnati; terms cash. C. H. W. Weber & Co., Cincinnati, O

Beekeepers' Supplies sold at a reduction. New prices now ready. Send for list free.
W. D. Soper, Jackson, Mich.

Notice—Beekeepers when in need of supplies write us for prices We can save you money. We make a specialty of odd sized hives.
The M. C. Silsbee Co.,
Cohocton, Rt. 3, N. Y.

For Sale—Medium brood foundation, one to ten lbs., 52c per lb. Up to 25 lbs., 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana. Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade.
J. F. Archdekin, Bordlonville, La.

Comb Foundation—You can have your beeswax made into best quality foundation. Also the wax from old combs or "slumgum." We get it all out. On shares or very cheap for cash; new factory; old liberal terms; cheapest and handiest transportation for all northern beekeepers. You always get your own wax back. J. J. Angus,
434 Fulton St., Grand Haven, Mich.

MISCELLANEOUS

For Sale—California little suburban farms, suitable for poultry, fruit and garden. Terms, write E. R. Waite,
Shawnee, Okla.

For Sale—35 colonies pure Italian bees with select tested queens of J. P. Moore strain, $4.50 per colony; 35 colonies with mismated queens from same strain, $4.00 per col.; 35 cols. light colored hybrids from the same strain with queens, $3.50 per col., all in 8-frame bodies in good winter cases, mostly the Quinby standard, full depth self-spacing Hoffman frames, 8 to each hive, all combs straight, and all strong and healthy with plenty of honey, f. o. b. here.
Wilmer Clarke, Box 200, Earlville, Mad. Co. N. Y.

For Sale—A fine farm in Florida, 10 or 20 acres, 2 acre orange grove, also apiary. Fifteen minutes walk from railroad depot. Write for particulars. Chas. Mack,
Mannville, Putnam Co., Fla.

For Sale—A good bee location; 40 acres with good house and barn; also 30 colonies of bees with fixtures. Located in the central part of Wisconsin. For further information write to Geo. Delano,
Royalton, Waupaca Co., Wis.

Free for Six Months—My Special offer to introduce my magazine, "Investing for Profit." It is worth $10 a copy to any one who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how any one, no matter how poor, CAN acquire riches. Investing for Profit is the only progressive financial journal published. It shows how $100 grows to $2200. Write NOW and I'll send it six months free. H. L. Barber, 546-20 W. Jackson Blvd., Chicago, Ill.

POULTRY

Rhode Island Reds—Both Combs. High grade; carefully bred; none better. Prices reasonable. Stock and eggs, by setting or hundred lots. Mating list free.
Fred Oertel, Box 24, Brighton, Ill.

If You breed fancy poultry, offer your surplus stock or eggs for sale in our classified columns.

Barred Rocks standard bred eggs for hatching. W. Coffman,
Rt. 3, Benton Harbor, Mich.

Poultry Paper, 44 124 page periodical, up to date, tells all you want to know about care and management of poultry, for pleasure or profit; four months for 10 cents.
Poultry Advocate, Dept. 230, Syracuse, N. Y.

Productive Bee-Keeping—The best methods for producing honey, under the greatest variety of conditions, have been studied, sifted and excellently arranged in this thorough, scientific yet practical volume by Frank C. Pellett, Iowa State Apiarist. The author has been in a bee atmosphere since early youth, his career has been that of a successful honey-producer, instructor to the profession, and an official government inspector of hives. It is a new kind of bee book and the best kind. He lets the other fellow talk about the poetry of the bee—he talks about the relation between your hives and your pocket-book.

Here will be found the material needed by the extensive producer who wants to have the latest information at his hand, the small producer who wants to study that he may make progress on the surest lines, by the beginner or student who wants to set up for himself and to do so upon the scientific basis that will bring the best return. The last word upon every subject connected with the industry is presented in a manner easily understood and immediately applied in the work of the expert or the beginner.

The 134 photographic illustrations are of the highest class, the handsome cloth binding is durable. 316 pages. Price $1.50 net, or postpaid with the American Bee Journal, one year, only $2.00.

EAT HONEY

PREPAREDNESS

High Grade Queens **Bees by the Pound**

Prepare for a big crop of honey by getting bees and queens from

M. C. BERRY & COMPANY

THREE-BANDED ITALIAN BEES AND QUEENS BRED FOR HONEY PRODUCTION

Price List—Swarms of bees in packages ready to ship now.

1-lb. Swarms, $1.25; 2-lb. Swarms, $2.35; 3-lb. Swarms, $3.35; 5-lb. Swarms, $5.35.

If queens are wanted add price as according to price list.

On lots of 5 packages or more will **prepay express** to your address east of the Dakota, Nebraska, Colorado and Texas lines, and south of the Canadian boundary. This applies only on orders received in April.

Price List of our queens by return mail.

Untested, 75 cts. Select Untested, 90 cts. Tested, $1.25. Select Tested, $1.50.
All queens are warranted purely mated. Wings clipped free of charge.

Our queens are bred from **Select Honey Gathering Stock,** the choice of over 1000, hustling, honey-producing colonies, that produce about two solid cars of honey annually. All orders for either bees in packages or queens will be filled **promptly** by return mail or express or as per booking. **There will be absolutely no delay.** We take only as many orders as we can **fill** and do so **promptly.** Let us have your order and get your **bees on time,** or your **money back** by return mail Our capacity is 100 1-lb. swarms a day and 6000 queens a year. We have no disease of any kind. Safe arrival and satisfaction we guarantee. Write for prices on wholesale quantities.

M. C. BERRY & COMPANY, Hayneville, Alabama
Successors to Brown & Berry
Largest Package Shippers in the South

The National Agricultural Society

Was founded by a group of far-seeing men of national reputation. Their aim is a high one—to weld together the various agricultural interests and make the organization a strong factor in national development. Every patriotic farmer should give his support.

Progress
Prosperity
Patriotism
Better Agriculture
Broader Citizenship
Bigger Opportunities

CONSTITUTION—Article 11

The objects of this Society shall be as follows: (*a*) To effect an organization, non-partisan and non-political, which by its unquestioned sponsorship and membership shall command general confidence and afford a common mouthpiece for the varied and diversified agricultural interests of the country on matters of National concern

The FIELD ILLUSTRATED

America's Only Quarterly Farm Monthly — All That Its Name Implies and More

The AGRICULTURAL DIGEST

What National Agricultural Society Can Do for You

In addition to the obvious advantages that will come to you as a member of a society of such high standing there are two distinct, tangible benefits. THE FIELD illustrated and THE AGRICULTURAL DIGEST will be sent without further expense to each member for one year upon payment of his annual dues of **$2.00.**

Tear off blank at right, fill in name and address, and mail with currency, check or money order for **$2.00.**

The NATIONAL AGRICULTURAL SOCIETY
No. 17-21 West 42d Street, New York

I herewith apply for membership in THE NATIONAL AGRICULTURAL SOCIETY and enclose $2.00 annual dues, to include THE FIELD ILLUSTRATED and THE AGRICULTURAL DIGEST without further charge.

Name..

Address..

THE RAREST AND BEST OFFER YET

A daughter of one of Dr. Miller's best honey getting queens and The Beekeepers' Review one year for only $2 00. Every one will want one of the famous world champion honey producers. Listen to the record: A yard of 72 colonies produced in one season 17,684 finished sections of comb honey or an average of 245 sections per colony. This is without a doubt the world's record crop from a yard of that size. Start breeding a honey strain of bees by using one of those famous queens this season. This is the first time stock from this noted yard has been on sale. Our breeder, one of the very best in the Gulf States, will breed from one of those best queens, and as his original stock is of the best three-banded stock, wonderful results is to be expected. Let us book your order at this time for one of those fine queens, for we only have for sale something like 500 for June delivery. The queen is well worth all we are asking, $2.00 and the Review a year.

1000 Pound Packages of Combless Bees for Sale With Queen

Did you ever ask a breeder to quote you a price upon a thousand pound packages of combless bees? If you did, you will have noticed that he took his pencil from his pocket and began to figure what such a sale would save him in advertising, postage, office help, etc., and the results would be that he would make you a very close price. Now we have that very close price on one pound packages of bees, as is usual with us to charge no profit on supplies furnished subscribers of The Review, none will be charged upon those, but our subscribers will get all the advantages of this good "buy." Notice that this close price is not for a late fall delivery, but for April and May deliveries, later deliveries at a less price will be quoted later, or by mail for the asking. Upon this deal we have two big points: First the price, second, the old experienced breeder who has spent his life breeding bees and queens for the market. We mention this so you will not get the idea into your heads this is a "cheap john" lot of goods, but they are as good as money can buy, no matter what price you pay. The price is $16 for ten one-pound package of those combless bees, each containing a young untested three-banded Italian queen. Additional pound packages without queens, one $1.00 each. For larger lots ask for special price. They are shipped from Alabama by express. Book your order early. Address,

THE BEEKEEPERS' REVIEW, Northstar Mich.

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

PRICES—Untested, April, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

HONEY AND BEESWAX

CHICAGO, March 18.—During the past three weeks there has been quite a free movement of honey, and stocks have been greatly reduced, as also the prices, because holders have become anxious to realize, and much of the honey has shown a tendency to granulation. Fancy comb honey is held at about 15c per pound, and anything off from this grade is from 1c to 5c per pound less. Extracted honey, white grade sells at from 7@9c, according to kind and quality, but sales have been mostly at 8c per pound for the clover and basswood, with the amber grades at from 6@7c per pound. Beeswax is selling freely at 30c per pound if clean and of good color. R. A. BURNETT & CO.

KANSAS CITY, MO., March 15.—The supply of extracted honey is large and the demand very light. The supply of comb is not large and the demand is light. We quote as follows: No. 1 white comb, 24 sections per case, $3.00. No 2 white comb, $2.50 to $2.75. No. 1 amber, $2 75 to $3 00. No. 2, $2 50 to $2 75. No. 1, white extracted, per pound, 7½@8c; amber, 6@7c. No. 1 beeswax, per pound, 28c; No. 2 25c.

C. C. CLEMONS PRODUCE COMPANY.

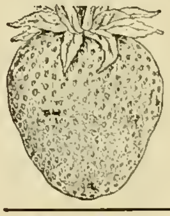
LOS ANGELES, March 15.—The market here in California at present on honey and wax is as follows: Water-white sage, 7½c; white sage, 6½c; light amber sage, 5½c; light amber alfalfa, 4¾c. All in straight carload lots f. o. b. shipping point. Choice country beeswax, 27c per pound,

HAMILTON & MENDERSON.

NEW ENGLAND

Beekeepers will find a full line of supplies in Boston. Send for catalog.

H. H. JEPSON
182 Friend Street, Boston, Mass.



4 MONTHS FOR 1

Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spray and selling fruit and garden truck.

Ask Us Your Hard Question

We conduct this department for the sp ial benefit of our subscribers. Experts : wer all questions by mail and through columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free Untested queens $1 each; doz., $9. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

YOU CAN'T AFFORD TO MISS THIS

CLOSING OUT SALE ON THE "LEWIS" GOODS, 20 Percent off, CATALOG PRICE

10-frame Wisconsin 1 1-2 story hives
10-frame dovetail hives with Colorado or Gabel covers, No. 1, 10-frame supers

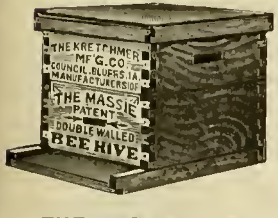
Get my special price on a complete line of the "LEWIS" goods, Dandant's foundation. Catalog of LEWIS BEEWARE free.

Address, **ADAM A. CLARKE**
Le Mars, Iowa

WESTERN BEE-KEEPERS can save honey and get the best goods obtainable, especially made to meet Western condition. Send for new catalog and special price list to

Colorado Honey-Producers' Association
Denver, Colorado

The Double-Walled Massie Bee-Hive



THE MASSIE HIVE
For Comb or Extracted Honey

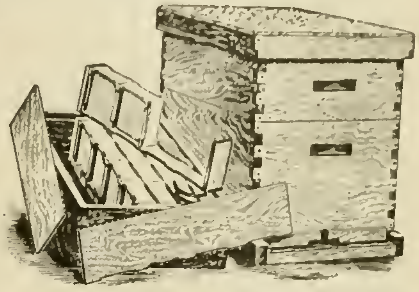
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames Made from White Pine

THE VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.


The Dovetailed Hive for Comb Honey

WHY NOT GIVE US A TRIAL ORDER? SATISFACTION FULLY GUARANTEED EARLY CASH ORDER DISCOUNTS

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 1100 3d St., Council Bluffs, Iowa

SAFETY FIRST

You are always safe in buying Murry's bees and queens. Unexcelled for prolificness, gentleness and honey-gathering qualities. No disease. Health certificate with each shipment of bees and queens, Three-banded Italians. Goldens. Tested queens any time. Untested after March 25th.

Queens	March 1st to May 1st			May 1st to Nov. 1st		
	1	6	12	1	6	12
Untested	$1.00	$ 5.50	$10.00	$ .75	$4.00	$ 7.50
Tested	1.25	6.50	12.00	1.25	6.50	12.00
Select tested	2 00	10.00	18.00	1.50	8.00	15.00

Bees by the pound after May 10th. Safe arrival guaranteed to any point within six days of Mathis, Tex. Large orders must be placed 30 days in advance of shipment, accompanied by 25 percent advance payment. This means orders amounting to $50 and up.

Pound packages	1	12	50	100
1-pound package	$1.50	$16.00	$ 65.00	$127.00
2 " "	2.50	29.50	116.50	330.00
3 " "	3.75	44.75	117.50	352.50

There is no better way for the beginner to start with bees than with the old-fashioned nucleus. I make a specialty of shipping nuclei.

1-frame nucleus without queen	$1.50
2-frame " " "	2.50
3-frame " " "	3.50

Any number wanted at these prices. No queens included with bees by the pound or nuclei. If queens are wanted, add price of queen to price of nucleus or pound package.

H. D. MURRY, MATHIS, TEXAS

Sweet Clover Seed

QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs	100 lbs.	Per bu 60 lbs	5 bu. lots per bu.	10 bu lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22.50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5,10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

Queens and Bees

FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5 00 each. One pound package bees, $1.25; 25 packages, $1 00 each; 2 pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2 75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

Fine Queens and Bees

Queens from my honey gathering strains of three bands and goldens at the following low prices: Untested, one, $1.00; 6, $5.00; 12, $9.00; 25, $17.50; 50, $32; 100, $60. Tested queens, 1, $1 50; 6, $8.00; 12, $15. Nuclei or lb. packages, 1-fr. with untested queen, $2.50; 6, $14; 12, $26; 2-fr., 1, $3.50; 6, $18; 12, $34. If tested queens are wanted add price as above

D. E. BROTHERS
Attalla, Ala.

THREE-BANDED ITALIAN QUEENS

They are bred from imported mothers. They are the best for honey-producing purposes; very gentle and not incline to swarm If you buy once you will buy always.

Prices	April 1 to July 1		
	1	6	12
Untested	$ .75	$ 4.25	$ 8.00
Select untested	.00	5.00	9.00
Tested	1.25	7 00	13.00
Select tested	2 00	11.00	20.00

We GUARANTEE that all queens will reach you in good condition to be purely mated, and will give perfect satisfaction. All orders filled at once.

L. L. FOREHAND
Fort Deposit, Alabama

Notice to Northern Beekeepers!

WE are making a specialty of the pound package trade, and will ship from our yards at Fitzpatrick and other points in Alabama, packages and queens during April and May at the following prices: One pound with queen, $2.00; without queen, $1.25. Two pounds with queen, $2.90; without queen, $2.15. Three pounds with queen, $3.80; without queen, $3.00. Untested queens, single, $1.00; six for $4.50; dozen for $8.50; in lots of 50 or more, 60c each. Select tested, $2.00. Breeders, $3.50. A special price quoted on packages of 50 or more. We have improved our pound package, making it larger, lighter and giving more ventilation.

Our vast experience with the Root Company, and our father, A. B. Marchant, enables us to know what the trade wants and needs, and we are well equipped to take care of any and all orders regardless of size. Our aim is to carry surplus so as to be enabled to fill all orders by return mail and on the day they fall due. Our stock is of the three-band Italian, and has stood the test for 20 years. **There is none better.** We have sold the A. I. Root Company two cars of bees and several hundred queens, and will sell again this season.

We guarantee safe arrival, freedom from disease, pure mating, no inbreeding, and your money refunded if not satisfied.

References: The American Exchange Bank of Apalachicola, Fla.; also The A. I. Root Company. Insure yourself against loss by placing your orders with

The Marchant Bros., - Union Springs, Ala.

OUR POST-OFFICE ADDRESS WILL BE UNION SPRINGS, ALABAMA

Bee book free

YOUR SUCCESS IN BEEKEEPING DEPENDS ON THE KIND OF BEES YOU KEEP AND HOW YOU HANDLE THEM

Blanke's 68 page book is not merely a catalog; it is an authoritative expert guide on the kind of apiary supplies that successful beekeepers have proved to be **profitable** in actual **use.** Blanke carries the largest stock of bee supplies west of the Mississippi, and can make prompt delivery. Every article carried is perfect fitting. Whether you're a beginner or an expert beekeeper you ought to get the Blanke Bee Book—send for it today.

Fine Poultry Book Also Free

If you keep poultry, too, ask us for illustrated poultry book; full of valuable pointers on poultry raising, as well as a catalog of profitable poultry supplies.

BLANKE MFG. & SUPPLY CO., PIONEERS IN BEE, POULTRY, AND DAIRY SUPPLIES, 209 WASHINGTON, AVE., ST. LOUIS, MO.

Maine Farmer

(Established 1832)

The only Exclusively Agricultural Newspaper in America. $1.00 per year in advance.

Issued every Thursday by

THE MAINE FARMER COMPANY

Augusta, Maine

ITALIAN QUEENS

THREE-BANDED

Ready April 1, of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey gatherers. Untested, $1.00; 3, $2.75; 6, $5.00; 12, $9.00. Tested, $1.25; 6, $6.50; 12, $12.50. Send for my free circular and price list, and see the natural conditions under which my queens are reared. Will book orders now.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas

OUR TEXAS BEES

Having locations where I can rear bees almost the year around. I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, $1.50; 2-pound packages, $2.50; 10-pound lots, $13; 100 pounds for $120. Queens shipped with pound packages at 75 cents each. By mail at $9.00 per dozen. Special prices to dealers in large lots.

WM. ATCHLEY, Mathis, Texas

"The Texas Beeman"

BEE SUPPLIES

of all kinds; low prices. Discount for early orders. Catalog free.

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HONEY LABELS

Our Catalog No. 26 shows a very complete line of Honey Labels, nearly 50 designs in all. When in need of labels we advise that you write for a copy of this catalog which will be mailed to your address promptly.

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Honey Health Books, Honey Advertising Blotters, Honey Display Cards, Eat Honey Stickers, Honey Food Value Stickers, also Envelopes, Note and Letter Heads, Circulars, Rubber Stamps, etc., are all listed in our catalog with prices in large and small quantity. Write now for catalog or send copy for estimate. Our goods are guaranteed to satisfy or money refunded. Address,

EASTERN LABEL COMPANY, Dept. 3, CLINTONVILLE, CONN.

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

EARLY ORDER DISCOUNTS WILL
Pay You to Buy Bee Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Missouri

START THE SEASON RIGHT

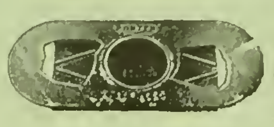
By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE
SAVES
HONEY
TIME
MONEY



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If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

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69 YEARS OLD

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Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST
BEE SUPPLIES
Best Sections, Best Shipping Cases
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

FIELD SEEDS
Full line including seed corn. Write for price lists.
F. A. SNELL
Milledgeville, Illinois

BOOKING NOW
Mullin's Unrivaled
ITALIAN QUEENS
GENTLE AND PROLIFIC

May 1st to July 1st, untested, $1.00; doz., $9.00. After June 1st, 3-frame nuclei with untested queen, $2.75. Satisfaction guaranteed.

O. S. MULLIN
Holton, Kansas

BECAUSE IT LASTS

That is One Argument in Favor of Cypress as a Beekeeper's Lumber

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

There are many qualities that make the value in lumber depending, of course, on the uses to which they are put. But of all virtues that of **endurance** comes first. The wood that resists rot influences longest, especially when the wood is used in a service by which it is exposed to wet and dry conditions and earth-contact—that wood is accredited with being able to give the user the greatest INVESTMENT VALUE.

No use tries the lasting qualities of lumber greater than that of Bee Hive construction. It is the very duce to get lumber that will not too readily rot—unless one gets Cypress lumber. Then there is a good show for endurance that means **real money saved on Repairs You Don't Have to Make.** Try it, Mr. Beekeeper.

STUDY THE WOOD QUESTION

There's one way to get at this matter of endurance—through books of authority. Such are the 41 volumes of the internationally famous Cypress Pocket Library. These books are not "advertising"—they are authoritative references on file in the libraries of scores of technical schools and National institutes. Ask for Vol. 1 to start with; it contains the complete U. S. Govt. Rept. on Cypress, "The Wood Eternal," and a full list of the other volumes: then branch out until you cover the subject.

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1251 Heard National Bank Building, Jacksonville, Fla., and

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For quick service address nearest office.

DADANT'S FOUNDATION

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EARLY-ORDER DISCOUNTS ON

DADANT'S FOUNDATION

Send us a list of the bee-supplies and foundation you will need for 1916, and we will gladly quote you our best prices.
It will pay you to buy early.

BEESWAX—We buy beeswax the year around and pay highest cash and trade prices. Light yellow wax from cappings is especially wanted. Your BEESWAX worked into foundation at moderate rates.

NOTE Old combs, cappings, and slumgum rendered on shares. Send for our terms. We will get all the wax and save you a "mussy" job.

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HAMILTON, ILLINOIS.

Agricultural
College

AMERICAN BEE JOURNAL

MAY, 1916

Send 25c. and the names of three fruit growers, and you will get a trial 12 months' subscription to the AMERICAN FRUIT-GROWER at one-half the regular price of FIFTY CENTS.

A monthly publication devoted to fruit growing, edited by practical orchardists and published in the heart of the Appalachian fruit belt.

TRY THIS PRACTICAL, HELPFUL PAPER AT THIS SPECIAL RATE

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Unhulled and Scarified Hulled
WHITE SWEET
CLOVER
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LET US FIGURE WITH YOU

We know we can satisfy you on quality. Write for catalog.

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Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

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Beekeepers' Supplies

Such as Winter Cases, Hives, Sections, Covers, Bottoms, Bodies, Supers, Brood-frames of every description, Shipping-cases, Section-holders, Comb-foundation, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Sheboygan, Wis.

BEES AND HIVES

If you are in need of bees, queens or apiarian supplies and want the best at a reasonable price, send for our catalog. 8 and 10 frame chaff hives. Full colonies, nucleus colonies or bees by the pound, shipped promptly. Tested Italian queens, $1 50; untested, $1.00.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4 50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2 75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

Preparedness Pays Big Dividends

So fortify and equip yourself with our 1916 Catalogue. Now Ready. Write toda

LEWIS' BEEWARE, DADANT'S FOUNDATION,
ROOT'S EXTRACTORS, SMOKERS, ETC.

Anything and everything you might need in Bee Supplies—and at righ prices. Ship us your old Combs and Cappings for rendering. Write for term

THE FRED W. MUTH CO.
204 Walnut St. THE BUSY BEE MEN. CINCINNATI, O

SAFETY FIRST

You are always safe in buying Murry's bees and queens. Unexcelled for prolificness, gentleness and honey-gathering qualities. No disease. Health certificate with each shipment of bees and queens, Three-banded Italians. Goldens. Tested queens any time. Untested after March 25th.

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2 " "	2.50	29.50	116.50	230.00

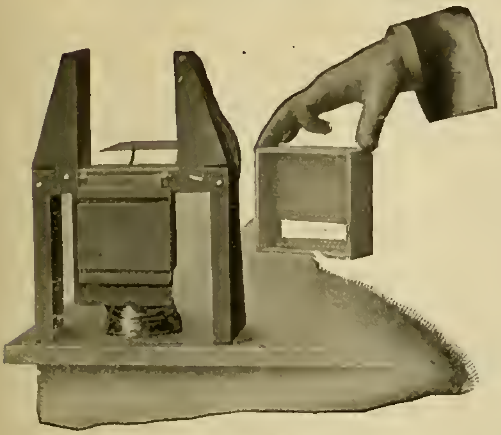
There is no better way for the beginner to start with bees than with the old-fashioned nucleus. I make a specialty of shipping nuclei.

1-frame nucleus without queen	$1.50
2-frame " " "	2.50
3-frame " " "	3.50

Any number wanted at these prices. No queens included with bees by the pound or nuclei. If queens are wanted, add price of queen to price of nucleus or pound package.

H. D. MURRY, MATHIS, TEXAS

Woodman's Specialties

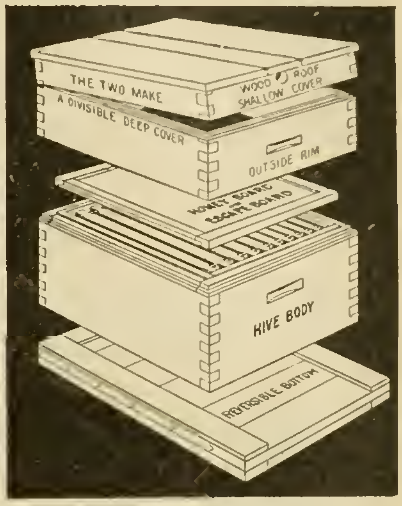


SECTION FIXER

GOLD MEDAL for the finest comb honey at the recent Michigan 50th anniversary convention, was won by Floyd Markham, of Ypsilanti Mich. He says:

"We have several kinds of machines for folding sections and putting in the starters, but since we got one of your Section Fixers, about two years ago, no other machines for the purpose are used in our shop. It pays to use bottom starters and your Section Fixer is the only machine that I know of that will do the job at any rate of speed and do it right."

DO YOU KNOW that with this machine you always handle large pieces of foundation which makes the putting in of bottom starters easy. Special circulars will tell you all about it. Price $2.75 with lamp and one form block, shipping weight 5 pounds, postage extra.



1 Story Protection Hive with divisible deep wood roof cover, consisting of shallow cover and rim.

PROTECTION HIVE

Air spaces or packing as you prefer. Seven-eights material in the outer wall, which means that they will last a life time. Used and endorsed as the best hive on the market by many prominent beekeepers of this and other countries.

Price, $14.75 for five hives, delivered to any station in the U. S. East of the Mississippi and North of the Ohio Rivers.

NORWICHTOWN, CONN., May 24, 1915.

Our State Agricultural College has just been voted a generous sum of money to be used in the construction of an Apiarian Building and outfit. They are negotiating with me for some colonies, and I will furnish them in your Protection Hives, for I believe them to be the best on the market.

ALLEN LATHAM

Send for catalog and special circulars. We are the beehive people. Send us a list of your requirements for 1916, and let us figure with you

A. G. WOODMAN CO., GRAND RAPIDS, MICHIGAN

TIN HONEY CANS—LOW PRICES

Our three-year contract is protecting us from high prices until July 1st. We will give the beekeepers the benefit of our low prices, so be sure you secure your supply before that date. 60-lb. cans shipped from Ohio factory or Chicago—friction-top from Chicago. Give us the quantity wanted and let us figure with you. Friction-top cans and pails—5-lb. size, per 50, $2.50; 100, $4.50; 203, $8.50; 1015, $40 10-lb. size per 50, $3.50; 100, $6.25; 113, $6.75; 565, $33.75.

A. G. WOODMAN CO., Grand Rapids, Michigan

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

THERE OUGHT TO BE QUALITY HERE

"We are furnishing Kennith Hawkins, the 'Quality Hill Queen' Breeder, one of our 'Queens of Quality,' and will offer queens from one of The Review mothers crossed with his 'Quality Hill' Drones for 1916. No buyer of 2400 more Queens for delivery after June 15, can afford not to ask for our special discounts on these great honey gatherers. We do not think one can make a mistkae in buying this stock."

The Review, Dec., 1915 This Townsend breeder exceeded the average of 1100 colonies by over 500 per cent last year. Sure will be quality here. These excellent honey queens 1, $1.00; 6, 5.00; 12, 9.00 until June 1. Later, 1, 75c; 6, $4.00; 12, $7.50. Write for booklet on Quality Hill Queens.

KENNITH HAWKINS, PLAINFIELD, ILLINOIS

Fine Queens and Bees

Queens from my honey-gathering strains of three bands and goldens at the following low prices: Untested, one, $1.00; 6, $5.00; 12, $9.00; 25, $17.50; 50, $32; 100, $60. Tested queens, 1, $1 50; 6, $8.00; 12, $15. Nuclei or lb. packages, 1-fr. with untested queen, $2.50; 6, $14; 12, $26; 2-fr., 1, $3.50; 6, $18; 12, $34. If tested queens are wanted add price as above

D. E. BROTHERS
Attalla, Ala.

FOR SALE

IF ALL TAKEN AT HALF PRICE

A large quantity of Bee-Supplies used and unused. Hives, Sections, etc., etc., etc., too numerous to list. Can be seen and examined at residence of undersigned, 165 South Forest Avenue, River Forest, Cook Co., Ill.

P. W. DUNNE

WHEN ORDERING SUPPLIES

Remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and Grand Trunk. Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Me.
J. B. MASON, Manager

STOP! LOOK! READ!

MARCHANT'S FAMOUS 300-POUND BREEDERS are now being bred in Florida during our honey harvest, and every beekeeper knows the best queens are reared during the honey harvest. Our 300-pound breeders are still holding their own; daughters from these breeders have on **their fifth story in the first week of the honey harvest.**

When you order Bees and Queens from us you have **quality, purity and honey gatherers.** We can fill your orders from the above famous strain for Queens, Bees, Nuclei and full Colonies promptly, or at such time as the purchaser may desire, and guarantee safe delivery and entire satisfaction to you in every respect. Our aim is to give you the best stock on the market at the time you want it. We ask you to give us a trial and let us prove to you that everything we claim for our bees is true. We will ship from Florida until May 20th, after that date from Canton, Ohio. Prices as follows:

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1 lb.	2.00	10.50	18.00
2 lbs.	3.00	15.00	27.50
3 lbs.	4.00	21.00	36.00
5 lbs.	5.50	27.50	50.00

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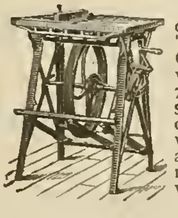

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AMERICAN
BEE JOURNAL

Vol. LVI.—No. 5 HAMILTON, ILL., MAY, 1916 MONTHLY, $1.00 A YEAR

A WORKING COMBINATION

Bees, Fruit and Poultry Provide Safety Against Seasons of Failure, With Something to Sell Every Day in the Year

THERE has been much discussion of whether it is better to combine beekeeping with some other pursuit to guard against seasons of failure, or keep a sufficient number of bees to enable one to harvest a sufficient crop in the good season to carry over the poor one. This will depend very much on the temperament of the beekeeper and on his locality. Failures are much more frequent in some localities than in others and there is a great difference in the number of colonies that a given acreage will support. These matters are always best decided by the beekeeper. He should be the best judge of his own locality and also of his own capacity as a honey producer.

Since many beekeepers live in localities which will not profitably support a sufficient number of colonies to furnish an entire dependance, or prefer for other reasons to combine beekeeping with some other pursuit it may be of interest to discuss the possibilities of such a combination.

It is usually safe to measure the possibilities in a given direction by some man's accomplishment and the description of a successful business has the added attraction of the human interest story. With this idea in mind the staff correspondent of the American Bee Journal visited Nauvoo to interview the president of the Illinois Beekeepers' Association and to learn something of his methods. Mr. E. J. Baxter is well known to many of our readers, having been an officer in the National as well as his own state association.

Nauvoo is an interesting old town because of its connection with the early history of the Mormon church; but that is outside our story. The Baxter home is just in the outskirts of the town and the first thing to attract the visitor's attention is the well kept vineyard and orchard. There are ten acres in the home place which gives the impression of being intensively cultivated, mostly in fruit. There is also another place not far away so that Mr. Baxter has about thirty acres devoted to fruit growing in all. Since Mr. Baxter is located within less than a mile of the Mississippi river, the limestone soil and proximity to the water are very favorable to fruit growing. Loss from spring frosts is less frequent than farther from the river. Locality is as important in fruit growing as in beekeeping.

The beekeeper looks for a large acreage of nectar-secreting plants, while the fruit grower must have a suitable soil and freedom from unseasonable frosts. Poultry can be kept almost anywhere if properly cared for, but the margin of profit in poultry is very small after the farm waste has been consumed.

Grapes Yield Heavily

The kinds of fruit which can most profitably be grown depend greatly upon a man's situation. If he has a good local market and plenty of help available, berries will often prove profitable, although the rush of berry picking usually comes during the height of the honey flow when the beekeeper needs little else to occupy his attention. Mr. Baxter has grown raspberries, strawberries, grapes and apples principally, with small quantities of pears and other fruits. He now grows grapes and apples with a small acreage of strawberries. Apples combine very nicely with beekeeping since the care of the orchard comes ahead of the honey flow and the picking of the fruit comes after the honey flow is over. With a suitable situation and a wise selection of varieties the apple orchard is a dependable source of revenue. While there are often seasons when the crop is light the average annual returns from the orchard will prove more satisfactory than from field crops. Mr. Baxter has a small orchard of seven acres which began bearing four years ago. The first two crops were good for such young trees, and for the last two years the return has been about one thousand dollars net per year, or about one hundred and fifty dollars per acre.

In planting an apple orchard great care should be used in the selection of varieties. There are many varieties that are such shy bearers that they could never pay, while others are not popular in the market and bring unsatisfactory prices. It is important, also, to buy the trees from a responsible nursery to insure that they will be true to name. It too often happens that after caring for an orchard six or seven years in the hope of realizing handsomely from later crops the owner will find himself imposed upon by the substitution of inferior varie-

THE BUSY SEASON IN THE BERRY PATCH COMES DURING THE HONEY FLOW

ties instead of those for which he has contracted.

If one starts an apiary in an unsuitable location the bees can be moved with but little loss, but an orchard is permanent and if a mistake is made in choosing the location or the trees the resulting loss will be heavy. Too much care cannot be used in selecting a location of this kind. If the owner has neither enough bees nor enough trees to furnish a sufficient support alone, he should be very sure that his location is favorable both for fruit growing and for honey production.

If one is not sure of his location strawberries can best be grown as a temporary crop. They yield well under favorable conditions, come into bearing quickly and since they must be re-set frequently a change of location will not result in serious loss. When asked about the profits from strawberries Mr. Baxter pointed to a small patch of less than half an acre which returned two hundred and twenty-five dollars last year. Berry growing is much on the order of market gardening. Quick returns and good profits are to be expected, but much labor is required. Unless the location is such that plenty of assistance can readily be secured for hoeing and picking there is danger of loss.

Another serious drawback to berry growing is the necessity for immediate marketing. In case of necessity the honey crop can be held for several months without injury, while the berry crop begins to deteriorate as soon as picked and a few hours more or less in the time of reaching market makes a great difference in the returns. This condition holds good to a greater or less extent for all fruit. Apples if carefully handled can be placed in storage and held for several months but even if stored prompt handling is necessary to get them moved in time. All fruits are sensitive to both heat and frost. While careful handling is necessary to prevent breakage in comb honey and some attention must be given to temperature to avoid granulation, with proper attention to these details there is less loss from changes of temperature with the honey than most other commodities.

The extensive honey producer will consider all these matters carefully before starting into fruit growing also. If only such fruits are grown which are suited to his location and which come at a time when work in the apiary is not pressing, it will be an excellent combination, since his work can be more evenly distributed through the year and there is less danger of failure all-round. If he makes the mistake of selecting fruits which ripen at the time of his honey harvest, either fruits or bees are likely to be neglected with a consequent loss somewhere and unless both are properly cared for he would be much better off with one alone.

Grapes are a very satisfactory fruit to grow where good markets are at hand. They yield heavily and continue to produce large crops for many years if the vineyards receive proper attention. Mr. Baxter harvested sixteen thousand baskets of grapes in one year from eight acres. These at twelve cents per basket returned about two hundred and forty dollars per acre. His average however, is only from one hundred and twenty-five to one hundred and fifty dollars per acre annually. In many localities there is no honey flow at the time of the grape harvest.

In Mr Baxter's locality there are frequent seasons when the honey crop is short and in such a locality it seems more desirable to combine beekeeping with some other pursuit as he has done. He himself has about one hundred and eighty colonies in two yards. The writer was interested in knowing whether with a larger number of bees he would not have done as well or better to occupy his entire attention with honey production. No figures for a long period of time were secured but the total sales of honey for three successive years when added gave a net return of about seven dollars and seventy-five cents per colony per year. Of course if a longer period of time had been considered during which time some years of failure occurred it would bring the average somewhat below these figures. However, Mr Baxter assured the writer that the bees had paid better for time and money invested than any other crop which he harvested and pointed to his fine home which had

THE APPLE CROP IS HARVESTED AFTER THE HONEY FLOW IS OVER been paid for from the proceeds of the apiary as an example of what can be expected from honey production. Mr Baxter's largest honey crop was in 1882 when he took twelve thousand pounds of honey from forty-one colonies spring count. This was when he had only a few bees and before he came to regard the business seriously. From that day to this he has been an enthusiastic beekeeper and although such unusual crops come only at rare intervals the memory of such a one is sufficient to lend encouragement during several years of failure. It is needless to state that this crop was not included in figuring the average return for the three years above quoted.

Mr Baxter began life without assistance and has accumulated his modest fortune entirely by his own efforts. When asked whether a young man without capital could hope to succeed under present conditions he did not hesitate to say that, if he would master the business and stick to the bees through thick and thin, he could within a few years make himself independent by growing fruit and producing honey for market.

There are numerous examples of young men who have started with a few colonies under difficulties and while attending to other work have gradually increased the number until they were prepared to cut loose and depend entirely upon the bees. While the man who has sufficient capital to carry him over a season of failure will usually find it more profitable to to depend entirely upon honey production and extend his business to the point where it will justify his entire attention, the man with limited resources will usually find it better to combine beekeeping with some other line for a time until he is more secure in case misfortune in the form of an epidemic of disease, poor seasons or other calamity should overtake him.

THE HOUSE THE BEES BUILT

THE BEES ARE WINTERED IN DOUBLE-WALLED HIVES

Value of Young Queens

BY N. E. FRANCE.

Read at the Wisconsin State Meeting in 1915.

WISCONSIN has over 10,000 beekeepers according to the United States census, and a large portion of those have rural delivery, are away from the busy city, enjoy fresh air, and best of home grown food; fresh eggs, butter and honey. They know the value of the best breeding in farm animals, also the care of same. Suppose I should advise them to sell that high priced sire at the head of the profitable dairy and use instead a cheap scrub sire whose breeding for generations was its own relation. They would at once consider me a fit subject for the asylum.

Again suppose I go into an orchard and find quite an apiary, and inquire as to what strain of bees it has. Too often I find hives of several kinds, some painted, others not, but all show neglect, and the hive entrances show a lot of small, almost black, bees likely badly diseased.

Who is to blame? Nature has done all possible to avoid inbreeding of bees, as the queen mates on the wing away from home, but if the entire apiary is inbred stock, what is the result? I know bee owners who have boasted to me of never having purchased any queens. I don't believe in it. I need not tell you what I find in such apiaries. Last season not an average honey crop was harvested, and many times in the latter part of the summer and fall I found small swarms not good enough to winter where the owner had no knowledge of the age of his queen.

Old queens, or those over a year old, will not fill the hives with bees in the spring or summer, and certainly will not have many young bees for winter. I consider young queens very important.

When I was wintering 600 colonies on summer stands, I seldom had much loss if I had young queens with abundance of good honey and colonies in well protected hives. Again young queens are much less liable to swarm, will have hives full of workers when the honey season comes, and head the profitable colonies.

It is not necessary to buy many queens every year, as enough from one good queen can be reared to requeen an entire apiary. European foulbrood is much worse in these weak inbred apiaries, so that I now consider this disease a real blessing in disguise. It means, where found, the owner will take much better care of his bees, introduce better blood, and give the bees the needed care.

AMERICAN
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BEE JOURNAL

PUBLISHED MONTHLY AT
1st Nat'l Bank Bldg. Hamilton, Illinois

Entered as second-class matter at the Hamilton, Illinois, Post-office.

C. P. Dadant, Editor
Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Cypress for Hive Stands

There is an increasing demand among the beekeepers for something more durable for hive bottoms and hive stands. Soft woods decay rapidly in contact with the soil, and because of its greater durability cypress is much better for such purposes. In a letter to this office, Dr. Bonney recently commented as follows:

> "My hive-stands are of cypress, and stand in the mud and wet all the time, and are as solid as when I got the first one several years ago."

Most manufacturers and supply dealers are anxious to give their customers a product that will give satisfactory service and we note with interest the tendency to offer cypress to those who prefer it.

Give Us Suggestions

Our readers appear to like the new arrangement of the American Bee Journal. Four issues have been published since we dropped most of the departments and substituted illustrated articles of general interest.

As announced in the March number, we have secured the services of a staff correspondent who will make long journeys when necessary to get such material as we believe our readers want. In our June number there will be an illustrated feature on marketing. To get this the commission merchants and retail dealers of Chicago were interviewed. We believe that the information gained will be valuable to our readers. The story of the work of the government at Washington in the February number, also that of the work in Massachusetts in the April issue are samples of the information our staff correspondent will furnish.

We hope during the coming months to publish articles from many sections and to describe some of the best methods of doing the work in the apiary, from extracting to queen rearing. We desire our readers to write us and suggest subjects which they would like to see covered by these feature articles. Two or three times a year we will issue a special locality number, like the New England number in April. These issues will contain little except information about the particular locality or by contributors who live in that section.

We are now trying to plan our work for a full year in advance, and accepted material may be longer in appearing than formerly. This does not indicate lack of appreciation of the contributions, but that we must wait until it fits the plan we have in mind for a special number.

We have still other improvements in mind and will be very grateful to our readers who write to tell us what they want to see in the Journal.

Transferring Bees

Special Bulletin No. 76, of the Michigan Agricultural College Experiment Station, by F. E. Millen, in charge of beekeeping, is the most exhaustive article on transferring bees which we have ever seen. It gives several methods and also directs how to remove bees from buildings.

In spite of modern progress, there are still many bees kept in logs and box-hives, in some parts of this country. Several States have laws demanding that bees be kept in movable frames so that possible brood diseases may be more readily detected. As long as box-hives are in existence such bulletins as the above will be useful. It may be had from Prof. F. E. Millen, East Lansing, Mich.

Visit to Texas

Wife and I reached home, late in March, from the Texas trip mentioned in the March Bee Journal. We have a number of requests for a detail of our impressions. This will be given just as soon as we can prepare it. Besides, a "Texas number" will be published by and by.

We have been compelled to disappoint some friends who were expecting us and have been disappointed ourselves in being unable to visit as many spots as we wished. Yet we traveled some 2400 miles and probably visited the best beekeeping region, where we met the representatives of about 35,000 colonies of bees. But Texas is such an immense State. Their honey crop of 1915 was well sold out, and the crop of 1916 keenly expected.

Our thanks are due to Prof. F. B. Paddock, State Entomologist, and to our genial friend E. G. Le Stourgeon, of San Antonio, for the courtesies extended by them. C. P. D.

Poisonous Spraying and Bees

The 6th annual report of the Massachusetts State Inspector of Apiaries, Bulletin No. 10, of the State Board of Agriculture, contains a large amount of gathered information on the damage done to bees by ill-timed spraying of fruit trees.

Enough has been said on this subject to convince the rational fruit grower that there is much to lose and nothing to gain from spraying during fruit bloom. Reports similar to the bulletin above mentioned will do much to impress the public with the advisability of spraying fruit only after the dropping of the petals of the flower. Professor Gates has done good service in preparing this bulletin.

Shipping Heavy Colonies in Hot Weather

Read the article in this number by Mr. Hayes. Often more may be learnt through failures than through successes. But the average man does not like to acknowledge failure. So those are most to be praised who inform others of their mishaps and thus warn them of danger.

Colonies of bees may be shipped even if heavy with honey, in hot weather, but there must be a free current of air through the hive, with full screens at both top and bottom. There must be no virgin combs heavy with honey, as the least jar is sufficient to break these, and when once honey is running the bees become daubed with it and are doomed. There must be no quantity of unsealed honey in any of the combs. It is best to extract a part of the honey a few days before shipping, so they may have at least one-third of their combs empty, on which to cluster. In addition it is well to have an empty super over the brood-chamber for the bees to cluster in also. They must be sheltered from a possible exposure to the sun's rays. Protective cleats must be nailed at both top and bottom, to maintain a space between the hive and the floor, or between the different hives if piled on top of each other in transit.

W. Z. Hutchinson wrote in the American Bee Journal, in November, 1885:

> "A strong colony confined to its hive and disturbed, in warm weather, generates a large amount of heat, and combs that are heavy with honey are almost certain to become so soft as to break down unless they are very old and tough.
>
> "In hot weather, or if the bees are to be confined any great length of time, there must be openings in the bottom as well as the top of the hive, in order that there may be a current of air to carry away the superabundant of heat."

In 1881 we transported 110 colonies from the hills north of our home to the Mississippi river lowlands, 24 miles away, about July 25. The hives were dry, as far as honey was concerned, and they had very little brood. They were entirely confined, with the exception of the cracks or joints of the bottom and top. But they had each an entire empty super in which to cluster, and the transporting was done at night, starting from the apiary at midnight and getting to the destination ten hours later. Not a single colony suffered, no bees were lost.

In 1915, 10 colonies were transported four miles on an automobile truck, without any other ventilation than above mentioned, on a hot July evening, but they were light with honey and had an entire super in which to cluster.

Not only is a hive heavy with honey difficult to transport unless the combs are very old, the honey all sealed and a current of air supplied from top to bottom; but even swarms of bees may suffer from confinement in hot weather. Mr. Langstroth wrote some 65 years ago:

> "I have several times examined the bees of new swarms which were brought to my apiary, so closely confined that they had died of suffocation. In each instance their bodies were distended with a yellow and noisome substance, as though they had perished from dysentery. A few were still alive, and although the colony had been shut up only a few hours, the bodies of both the living and the dead were filled with this same disgusting fluid, instead of the honey they had when they swarmed."

Demand for Sweet Clover

Among the number of 1916 bee-supply catalogs we have seen, only one mentions sweet clover or lists the seed. New articles on which there is doubtful pecuniary gain do not readily find their way into a catalog, but sweet clover is so valuable that no catalog should fail to offer the seed. Prominence, a cut, and brief hints about the plant, will not call for more space considering its value than common articles needed by beekeepers. The seed can be handled at a reasonable profit.

There has been a long felt want; in fact, a demand among beekeepers for a plant that would produce nectar and otherwise be worth while cultivating. Sweet clover answers this demand.

What bee-supply dealer has not been requested for information about the best plant to grow for the bees? Sweet clover can be universally recommended as it will grow well in almost any locality, and abundant authority can be given to show its great value for cultivation.

Iowa Inspector Report

It is hardly proper to praise people who are of our own staff. Yet we would make a mistake not to recommend Mr. Pellett's Report for the year 1915. It is just as full of information as the report of the previous year, and we predict that the edition will be exhausted before everybody gets a copy who ought to have one. It may be had from Frank C. Pellett, Atlantic, Iowa.

Don't Let Them Starve

There seems to be a general shortage of honey in the hives this spring, in some locations, owing to the great strength of the colonies. They have bred plentifully and might suffer before the clover flow, if the fruit blossoms fail to yield honey. In the Middle States, the beekeeper will do well to watch closely his colonies until the crop is on.

More About Sweet Clover

Bulletin No. 235, of the Ontario Department of Agriculture, has for its title "Sweet Clover" (*Melilotus*). It is a 32-page bulletin, and was written by H. L. Fulmer, B. S. A., Lecturer in Chemistry.

Being a chemist, the author devoted a considerable portion of the booklet to the discussion of feeding value, manurial value, digestibility, proper stages for cutting, nutrients, etc., and he accomplished what he did, too, in a manner that should leave little doubt in the minds of the readers of this bulletin as to the future value of sweet clover. For instance, in its contained nutrients and in fuel value sweet clover stands twice as high as timothy, alsike or red clover, and nearly twice as high even as alfalfa. It has more ash and more carbohydrates than any of the above mentioned plants and only a little less protein and fat than alfalfa.

The bulletin gives a clear and comprehensive description of the nature, distribution, habits and management of this valuable plant.

About its value as bee-pasture, the author says, "On account of the prolonged blooming season—from June until frost in autumn—sweet clover proves an ideal honey plant. The honey obtained is colorless and of fine flavor. The name of this plant, *Melilotus*, comes from the Greek and means honey or syrup of lotus. Hence, at the time the plant was named it was recognized as a leading source of honey."

The bulletin is well illustrated, and we presume is for free distribution, at least in Canada.

Those Compound Words

In the literature of our favorite pursuit, a number of compound words occur, and there has been a lack of entire uniformity as to the appearance of these words on the printed page; which, indeed, may be said to be true regarding compound words in general. Some time ago, Dr. E. F. Phillips opened a conference with Editors E. R. Root and C. P. Dadant, with the writer as assistant counsel, with the design of securing greater uniformity, and a list was made out in which there was more or less agreement.

The Beekeepers' Review has thought this list of sufficient importance to publish it, and one of its associate editors, Prof. E. G. Baldwin, has made some comments upon it, in which he says: "The effort is probably a worthy one, inasmuch as it is a step toward unification of usage." He asks, "Is it too much to add that many obvious compounds have been omitted from this list? Or is this merely intended as a starter, and others are to follow if these are accepted?" Hardly as a starter, Professor, for nothing was said about further additions, yet it is not at all claimed that the list is complete. At the same time it is doubtful if a single "obvious compound" was omitted; that is, that was obvious to either of us. Frankly, I'm glad you give that hint, for I hereby challenge you to give us a list of the "many" that are obvious to you. I'll be glad of the outcome either way; if you can't think of half a dozen additional, I'll be glad of the joke on you; if you give quite a long list, I'll be still more glad to know more of a man who can give a lot that I couldn't think of—or at least didn't think of. And in the latter case I'll hide behind the claim that I never spent much of my life lexicographying.

Prof. Baldwin seems to see inconsistencies in the list. The whole business of writing compound words is more or less a thing of inconsistencies. The Professor will have a busy time of it if he attempts to reconcile all the compound words in the dictionary. Let him try his hand on egg-shell and horsehair. In the present case there is less chance for consistency than in the dictionary; for there are four men with different notions, and no distinct law by which to be guided. If they can compromise their differences it will be a gain, in spite of the inconsistencies. It is better to have all write "bee-yard" and "outyard" than to have no unanimity."

If there be any law in the case, it seems something like this: When a word is compounded, a hyphen is written between them; then when the compound is sufficiently familiar the hyphen is thrown out and the two words are written as a single word. Yet some seem inclined, when throwing out the hyphen, to let the two words fall apart as single words. That way lies confusion.

Prof. Baldwin seems to think that a change in putting in or leaving out a hyphen has some effect in changing the accent. That's new to me, and I'm sure it's not true in my case. He says: "For example, Dr. Phillips' list has 'bee-culture' accents on both bee and culture, which is obviously common sense, inasmuch as no one would ever try to say 'bee' 'culture,' with only one accent." Beg pardon, Professor, but that's exactly the way I've pronounced it all my life, without any reference to the way it might be printed, and I never noticed that any one else pronounced it differently.

In the list is the word "beestings." Prof. Baldwin says: "This word 'beestings' is a poser. Do you know that it is only one of the two correct spellings of the word for the first milk given by a cow that has freshly calved, and is a technical word, when spelled as a single word, not compounded, and that the other spelling is, *biestings'?* We would respectfully suggest that this word, at least, better be spelled either 'bee stings' or 'bee-stings.'"

Well, you're not the only individual, Professor, who objects to "beestings." Another writes: "I agree with Prof. Baldwin on 'beestings,' which looks 'beestly' to me. I have been trying hard to follow the rule, but my conscience hurts whenever I write that word."

Well, now, suppose—just suppose—that the milky beestings had never come into existence, and we want to decide how to write the word that means the stings of bees. If we write it in two separate words, then we may as well throw to the winds all idea of using hyphens for *any* compound words, or of writing them as single words, and say that when more than one bee stings bee stings always result. If we admit that at any time in its history our word was entitled to a hyphen, surely the frequency of its use warrants that the hyphen now disappear and that the two words be run together as one. In short, any reasoning that warrants "fleabite" warrants "beesting." Clearly "beesting" it should be *if* that other word were not in the way.

Trot out now your beestings that you get from the cow, and see how much claim it has to drive out our friend that comes from the bee. Your question as to one's knowledge of it, together with your giving its full definition, shows that you do not believe many know of the existence of such a word. I am not ashamed to confess that I never knew there was such a word until hunting in the dictionary after the sting of a bee. Honest Injun, Professor, did you know of the word with the milky meaning before you saw that list? And now you and our friend of the tender conscience want us to give up a perfectly good and useful word—allowing that "bee sting," "bee-sting," and "beesting" are three different words—all because there is *in the dictionary* a word that we have never met elsewhere, never have heard used, and probably never will, for no other reason than a bit of sentimentality. Don't you really think that's carrying sentimentality just a little too far?

Anyway, I'm glad of your interest in the matter, and the longer you make that list of omitted obvious compounds the better I'll like you. C. C. M.

Honey Desserts

This is a little French publication by Tante Line, containing some 20 recipes for honey desserts and ending with a pretty legend connected with the present devastated condition of poor Belgium. We have selected among them a recipe of honey pastilles, because we are already acquainted with these, since our good friend, Mr. Prieur filled our pockets with them at our passage in Poitiers, as reported in our Journal for July, 1915. A quart box of these pastilles was distributed among the beekeepers at the National meeting in 1914.

HONEY PASTILLES.

These are made of a mixture of sugar and honey. Honey alone, even if much cooked, would not reach sufficient stiffness or consistency. Then take: Sugar 5 pounds, water 2½ pounds, honey 2 pounds. First melt and heat the sugar on a slow fire until it is cooked, without being burnt; as it is cooked for the making of candy for bee feeding. The proper point of cooking is very important. It takes a little experience. When it has reached the proper degree the syrup becomes glittering. One may ascertain its proper degree as follows: Dip your finger in a glass of cold water and immediately after in the boiling liquid. Withdraw it quickly. If the syrup is sufficiently cooked it will in cooling become firm enough to be rolled in the fingers. If you are afraid of burning your fingers, you may, instead of the finger, use a straw or a little stick of wood. This is also dipped first in the cold water and then in the hot liquid. Then let a few drops of the latter fall into the glass. These drops will harden in the bottom of the glass, if the syrup is sufficiently cooked.

The honey should be added then: 4 pounds for every 10 pounds of sugar, and continue the cooking until the syrup becomes brittle when dropped into cold water. One must be careful all the time not to allow it to burn. This last cooking is the most difficult part of the operation.

When the syrup is done, the paste is poured upon an oiled marble table, and before it gets cold it is divided into squares or lozenges, or, still better, it may be put into moulds to give it whatever shape is wanted.

The large confectioners' shops are provided with moulds which work automatically and permit the manufacture of a large number of lozenges in a short time.

As honey is very deliquescent and absorbs moisture readily, those pastilles, when put up, would stick to each other. To avoid this trouble, they put into the tin boxes containing them another small box punched full of holes and containing chloride of lime, to absorb moisture. Another method is to slightly steam the pastilles and then roll them in fine powdered sugar, which prevents them from sticking to each other.

BEEKEEPING IN CHILE

By M. C. Richter

IN the fall of the year 1844, 25 colonies of bees left Milan, Italy, on a long journey around Cape Horn to the Port of Valparaiso, Chile. Their owner, Patricio Larrain Gandarillas, who had previously made an unsuccessful attempt to introduce bees into Chile, was this time rewarded for his efforts. Two colonies out of the 25 survived the trip. Although both of these were extremely weak, each cast a fine swarm the following spring, much to the astonishment of the natives who could not understand why so many bees should hang on the limb of a tree in such a peculiar manner.

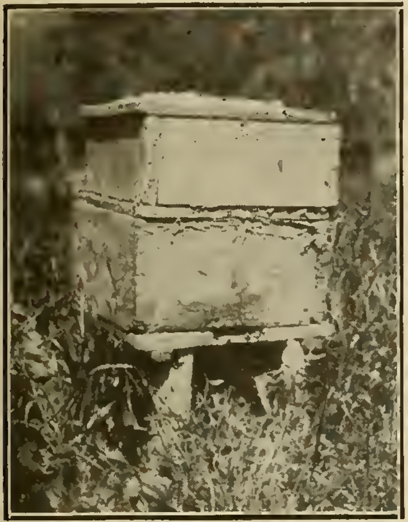


Fig. 1.—The Common Beehive of Chile—Its Dimensions are 13x13x6 Inches

Forty years later, the descendants of these two Italian colonies reached from the 25th to the 44th parallel of Chilian territory; a distance of 1315 miles, or nearly twice the length of the State of California. It speaks well, indeed, for Chile as a bee country and for the Italian race of bees.

About 95 percent of the apiaries extending over this immense stretch of land consist of small frameless hives (Fig. I.) that produce per colony an aaverge of about 14 pounds of honey and 3 pounds of wax annually.

The "inquilinos" or farm laborers handle these apiaries, which are merely adjuncts to the large farms of the country. Some of these yards are very large, and run into the hundreds of colonies. They have, however, entire valleys and canyons to themselves. A typical apiary (Fig. II.) may contain in the spring 300 colonies, and by fall, through prime and afterswarms, as many as 700 colonies. The winter loss, however, is nearly 50 percent.

The methods of beekeeping are most crude. In the spring swarms are hived in the small boxes described above, and in a short while three or four empty ones are added. Before winter sets in all but one or two of these are removed, their contents cut out and thrown into a kind of solar wax-extractor. It not infrequently happens that the queen and many bees are included in this operation. The box or two remaining, supposed to contain the colony, are prepared for winter by plastering the cracks with mud. The honey taken from these so-called wax-extractors is, with a good portion of its impurities, run into barrels. Frequently these containers are poorly made and leaky, much to the disgust of the railroad and steamship officials and honey buyers.

The honey is sold in Europe; under normal conditions 60 percent going to Germany; 15 percent to England; 15 percent to France; and the balance, 10 percent, to Belgium and the Argentine Republic.

Notwithstanding these very crude methods of beekeeping, Chile's average exports from 1905 to 1910 were about 4,000,000 pounds of honey and 750,000 pounds of wax annually. The beekeeper sells his honey ordinarily at from 4 to 4½ cents a pound and wax at or near 25 cents a pound. The beekeeping industry enriches the country annually by some $375,000.

Such statistics appear quite remarkable for the box-hive artist, but when it is explained that there are no brood-diseases, and but a mild form of paralysis, they are more easily understood. The value of the wax produced is nearly that of the production of honey. This again can partially be accounted for by the fact that no combs have been destroyed by the waxmoth. The above statistics show that the ratio of honey to wax is about 5:1, whereas in our country, according to the United States Census for 1910, it was over 60:1.

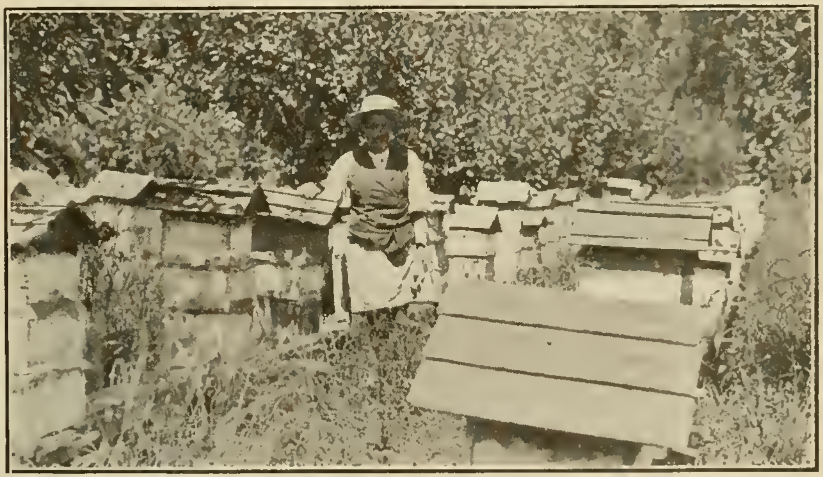


FIG. 2.—A CHILIAN APIARY AND ITS CARETAKER

Soon after the writer's arrival in Chile in the summer of 1911–12, he received the appointment of Governor Entomologist at the Estacion Patolojia Vegetal at Santiago, and in that capacity assisted in framing a bill to prohibit the introduction of bees, queens, honey, wax, etc., into the country. But no sooner was the bill before the Chilian Congress, than several samples of moth-eaten comb were received at the Entomologist's office from beekeepers in one of the southern provinces. Upon investigation it was found that some colonies of bees had recently been introduced from Germany, and with them came also the waxmoth.

There have been in the past, and are also today, several excellent beekeepers in Chile. One of the earliest was Vincente Chuecas who, in 1865, owned 640 colonies, one-third of which were in hives not unlike the Harbison hive of California. After several years of hard labor, he gave up beekeeping in disgust, because he could not realize even one cent a pound for his honey, while 100 pounds of wax brought him but $4.50. Do you blame this pioneer Chilian apicultor, el Senor Vincente Chuecas?

Twenty-three years later Alfredo Duffy and R. A. Sanhueza produced large crops of honey. The former used the Dadant-Quinby hive and the latter the De Layens hive. In 1892 an English beekeeper, J. R. W. Hale, commended beekeeping in Chile and criticised the Chilians because they kept more than 1000 colonies of bees in a single apiary. He, however, kept as many as 500, and got an average of 73 pounds to the colony.

Of the present day beekeepers there are Bernardino Hernandez whose 1911–12 crop averaged 27.5 pounds of honey and 2.7 pounds of wax per colony from 1100 colonies in Chilian hives; Guillaume Javet, whose 1911–12 crop averaged 36 pounds of honey and 2.5 pounds of wax per colony from 1000 colonies in Dadant hives; and Raymond Madaune, whose 1911–12 crop averaged 44 pounds of honey and 1.6 pounds of wax per colony from 300 colonies in Dadant hives.

In the field of apicultural literature Chile is well to the front. About the year 1890 she was the proud possessor of a bee journal edited by Juan Dupont-

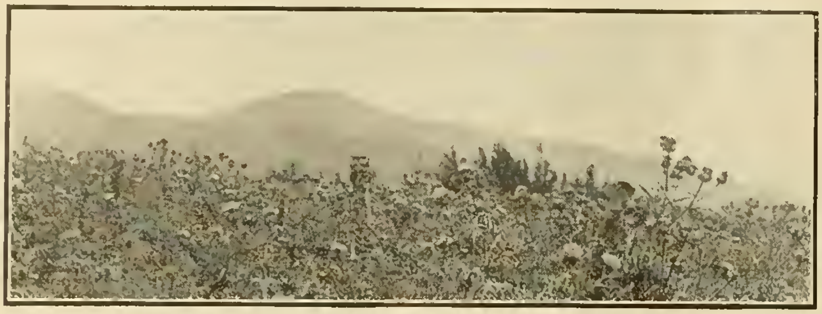


FIG. 3.—CARDO. THE GIANT THISTLE OF CHILE

Lafitte, and called "El Apicultor Chileno." But, alas! This, like so many of her sister journals, died a natural death. In 1892 Echeverria Cazotte put out a comprehensive treatise on bees, entitled, "Colmenas y Colmenares." Later a similar but smaller work, "Tratado de Apicultura," by F. Balaguer appeared. The latest book on beekeeping, however, is by a Swiss, Juan Brunner. It is "Curso de Apicultura," and the writer understands that Senor Brunner is connected in some way with the Institute Agronomico at Santiago, where there is now an experimental apiary and where courses in beekeeping are also given.

The only apiary of Langstroth hives that the writer found was that of Mr. John A. Wolffsohn. In fact, Mr. Wolffsohn has been the only beekeeper that has been successful with the American hive, although prior to 1912 there were some 800 or 900 of our hives in use in Chile. The failures were due solely to the fact that those employing our make lacked knowledge of the rudimentary principles of beekeeping. As an exporter, Mr. Wolffsohn, at one time handled one-half of the entire amount of honey that was shipped out of Chile. He is today not only the best informed man on apicultural matters, but is also doing more than any other to advance our industry in Chile.

The future of beekeeping in Chile is exceptionally bright. The climate is like that of California, and the honey-producing flora is not only rich but practically limitless. Splendid locations abound from the northern Province of Atacama to the southern Province of Llanquihue. The uppermost provinces are comparable with the Imperial Valley of California, and, where there is irrigation, good crops of alfalfa honey are produced.

The central provinces are not unlike the big valleys of California, with the exception, of course, that they are not nearly as large. Of the trees, the best honey flora in these regions are eucalypti (several species), willow, locust, acacia, fruits (all the common varieties), pepper, quillay, and corontillo. The latter two have no English names, and are, by far, the two best honey-producing trees of the central part of the country. The honey-producing plants in this section are: filare, wild mustard, wild turnip, wild radish, phacelia, white clover, red clover, alfalfa, the various vegetables and melons, Mayweed, horehound, sweet fennel, cardo, peppermint and sunflower. Cardo (Fig. III) is the well known giant thistle of Chile, and is a regular producer in large quantities of a finely flavored white honey.

The southern provinces are famous for their honey-producing trees, most of which yield an excellent white honey. They are the ulmo, quillay, maiten (Fig. IV.), maqui, coigue, and piche. White and red clover and Palo Santo are also good honey producers.

San Francisco, Calif.

[To be continued].

What Constitutes a Good Queen

BY J. P. MOORE.

ALTHOUGH there are queens and queens of all varieties and colors, very few buyers state just what they want in them, and very few breeders take the care that they should in rearing them. *A good queen* is two words with a big meaning, for she must be good in many more respects than one. Her pedigree must be looked up well.

I consider the three-banded Italian queens superior for all purposes, and this article treats of that strain only.

Many beekeepers never stop to think of what they want in their bees, looking only to the one quality, namely, "honey gathering," but if they would demand in their queens all the points which are listed below, beekeeping would become established on a higher plane and would improve faster than it does. Every beekeeper, whether large or small, should be a subscriber to at least one beekeeper's magazine.

The queen-breeder must rear his queens from mothers who have made an extra good record for honey productiveness, for non-swarming (under trying conditions), for gentleness, for prolificness, for hardiness, for purity, and for size. Next, these daughters must be mated with drones whose mothers have been selected with the same care as the queens. This should produce a strain of bees that will not only bring in the honey fast but withstand severe weather, be gentle to handle, and disease resistant as well.

It is safe to say that if our queens are reared and mated with the above points carefully kept in mind, they will resist almost any disease known to bees unless through ignorance or neglect the disease is actually thrust upon them.

We take great care in the breeding and rearing of our fine stock, such as horses, cattle, etc., why not put this in practice with our bees also?

Hardiness in bees develops the honey gathering qualities. I have often seen bees out at work just as dawn was breaking and almost at dark in the evening on cool days. This means good workers that will withstand some of our severe winters, and it takes the right kind of queen to produce these workers; therefore, I make *hardiness one big point.*

I do not place much stress on color, as I have had dark queens in my apiary that produced as much honey as did some of my best breeders or even more. Large yellow queens are desired by many for the reason that they are easier found when examining the colony. These queens become darker and more leather colored as they grow older.

Never under any circumstances breed from a queen whose workers are inclined to swarm. Let us try to get rid of this kind. In the interest of beekeeping always demand the best in your queens.

Morgan, Ky.

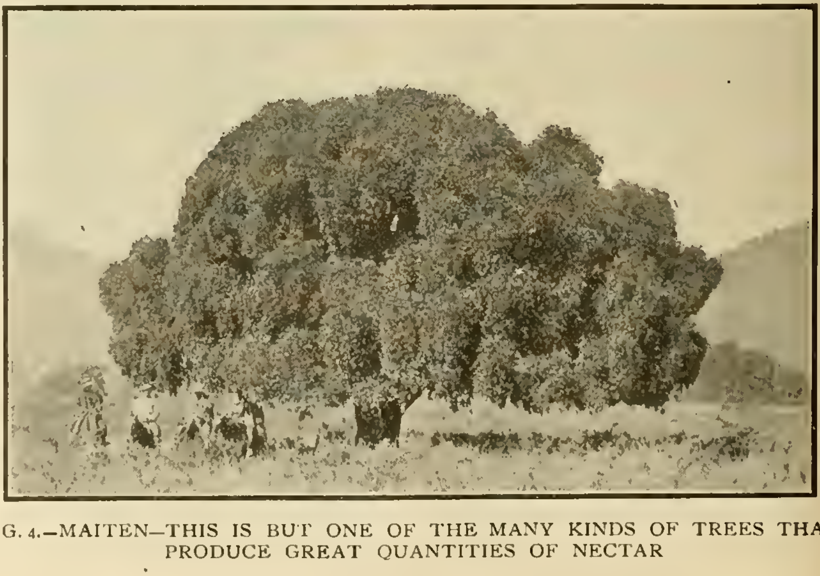


FIG. 4.—MAITEN—THIS IS BUT ONE OF THE MANY KINDS OF TREES THAT PRODUCE GREAT QUANTITIES OF NECTAR

What Constitutes a Good Queen

BY G. M. DOOLITTLE.

DURING the past year or more there has been a prize contest going on regarding which kind of hens will give the most eggs under the same conditions as near as may be, the same being reported in the Rural New-Yorker. Many different breeds were entered, breeds advertised to be the very best, as well as those "show birds bred to a feather." The Rural man sent in the same number as the others of what he picked from his farm stock which he called "scrubs," and when I last read in the matter these scrubs were keeping well up toward the 'head," out-equalling many of the show birds and others that were advertised the "best in the world."

With this vividly in my mind, I am asked to say something about "What constitutes a good queen." The breeder of "five-banded bees" will tell you, like the chicken man breeding "to a feather," that any queen which does not give four-fifths of five-banders is not worth having. Now, don't all laugh. I have been offered $50 for a queen that would so give, and $500 for a queen that would give every worker showing five golden bands on the abdomen, the two to be taken to some isolated—from other bees—island, the one to be used for rearing drones and the other for rearing queens.

This party desired "peaceful disposition" and "good honey-gathering qualities," together with the "white capping of section honey," if these could accompany the five golden bands; but if the others were not consistent with the bands, give him the bands and he would look out for the other points. Now, if he gets just what he wants along the "bands" line, I mistrust that some queen in an afterswarm in a box-hive in some farmer's yard, should the colony winter through, would be "way up near the head" in a contest for honey with anything that could be picked from these "bred to a feather" queens.

The Editor tells me that a *short* article is wanted, and here I have run on and told nothing of value to the one who is keeping bees for the dollars-and-cents in honey production. But, say, Mr. Editor, make sport of "bands" as we may, there is more money for the work in rearing "banded stock" for the wealthy men who have a few colonies and desire to run them for pleasure and profit than there is in rearing queens for the beekeeping specialist who has only *honey* in sight. Therefore, what constitutes a good queen depends upon our standpoint of looking. My aim in queen-rearing during the past 35 years has been *hardiness* of bees to stand our northern winters, for on this hangs the success of summer, long-lived bees having lots of energy and "vim" for rolling in the honey, white capping of comb honey, for this catches the eye of the consumer; bees fairly gentle to handle, and with a combination of these qualities, the best-of-all quality, the laying of a maximum number of eggs in time for the bees from these eggs to come on the stage of action when the flowers of our main surplus yield begin their bloom.

Now, the most of our queens come up to these requirements in our home apiary and outyards. However, some single queen, after being taken from her colony, and shipped from 1000 to 2000 miles away, may not prove, after arriving, equal to what she was before shipment, and thus an expectant purchaser may be disappointed. Notwithstanding the eggs and larvæ from such queens will have just as good queens in the purchaser's apiary as they would before she was shipped. At least such has been my experience.

Marietta, N. Y.

Italian Bees in Liguria

BY V. OREGGIA.

IN one of my former letters I promised to ascertain the exact confines in which live the two races of bees, in Italy. After a trip made for my business, I am able to give these limits, which coincide almost exactly with the information already furnished. To succeed best in making one understand at a glance the position of the places mentioned, I send a railroad table of the locality. On this I have marked with black lines the places where the common bees are found, with dots where the hybrids exist and with circles where the yellow bees are.

As a matter of course, eastward and northward from the circles marked, the bees are Italian and cannot be otherwise.

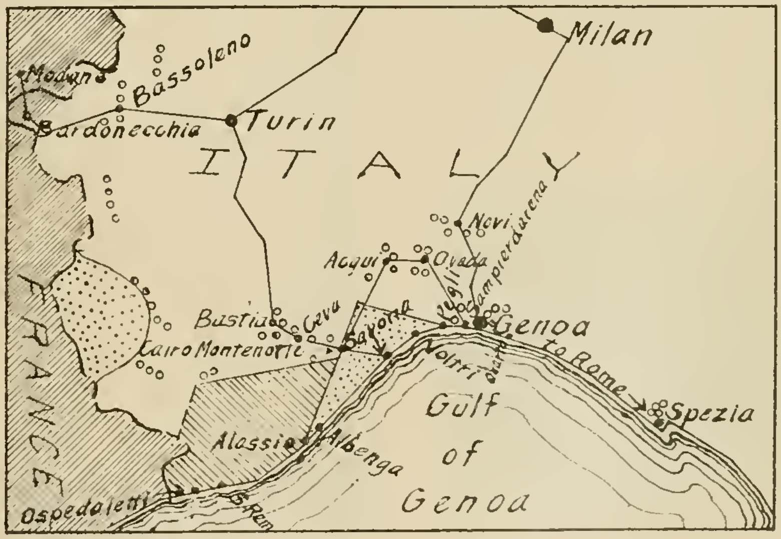
Our colleague, Mr. Edward Bertrand, who for several years spent the winter in Ospedaletti, in western Liguria, has called my attention to the fact that the entomologists were incorrect in naming the Italian bee *Apis ligustica*, for in that part of Liguria he has found none but common bees. However, although this is true for that part of western Liguria, it is different in the eastern part, for at Genoa and at Spezia, on the Genoa-Rome railroad line, I have never found any but pure bees.

In my tour, made especially for beekeeping operations, I had the leisure for thorough verification, for I not only watched bees in the fields, but visited rustic apiaries as well as those with movable-frame hives.

Proceeding eastward from San Remo, the first Italian bees I found were at Alassio, on the San Remo-Genoa line. In this place, which is the first station west of Albenga, I found, at the college "Del Salessiani," about 40 movable-frame hives well stocked with bees. Among them were six colonies with yellow bees, in one about one-fourth yellow, in the others less. At Albenga, 7 kilometers farther, I found no apiaries, but saw yellow bees on the flowers. Proceeding towards Genoa, the common bees diminished rapidly, so that at Voltri, 14 kilometers, I saw but a few common bees. At Pegli, 10 kilometers, I saw none but yellow bees. Desirous of verifying around Genoa, I found two apiaries, one east, the other west of the city. The first was at Sampierdarena (3 kilometers west), at the college of Don Basco. The other was at Quarto (8 kilometers east), at the home of Signor Nicolo Ageno. After having most carefully examined the bees, I found not a single common bee in either apiary. Similarly, in the confines of Piedmont, at Novi, Ovada, Acqui, only the pure yellow race can be found. Going back towards Savona, from the last named city, I found the first common bees at Carlo-Montenotte. There I visited two numerous apiaries, one belonging to Signor Carlo Brondo, the other to the attorney Rodino. The common bees were very few. From there I went towards Ceva and Bastia, where I again found the pure race.

On the line Turin-Modane, I found black bees altogether at Bardonecchia, but at the intermediate station of Bassoleno I visited two apiaries and did not see a single common bee.

I send a photo of our "honey-moon" and of the box in which we put it up for sale. I do not know whether it will interest you, but thought it might please your readers. As to the details of its manufacture, the glass rings are put into shallow frames, just like ordinary section boxes. The frames are adapted to fit them, and we use separators to



LIGURIA IN ITALY

secure regularity. The frames contain four moons and are 10x40 centimeters inside (4x16 inches). The first difficulty encountered was getting the bees to work in such small and numerous rings. This difficulty is eliminated by getting the bees to work out the foundation in large frames first, then cutting it of proper size with a circular cutter, making round pieces which exactly fit the inside of the ring. We then use a hot wire to make the comb stick to the glass ring in a few spots. In this way the good looks of the comb, seen through the glass, are not injured.

I have a few other inventions of which I will send descriptions, a smoker, a feeder and a patented box for transporting bees. Accept my thanks for sending me the Bee Journal which I receive regularly.

Tavole, Italy.

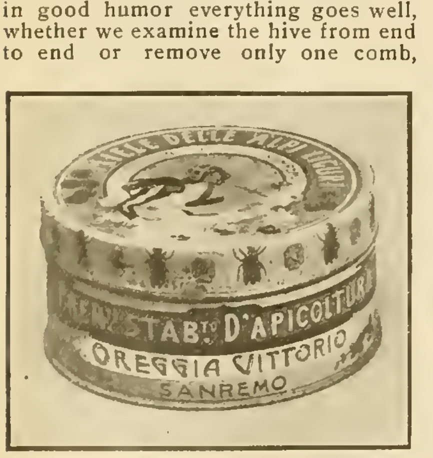
[An adequate idea of the mountainous aspect of the country described in the above letter may be obtained from the fact that, from Genoa to Arquata, on the way to Novi, there are 24 tunnels in a distance of 25 miles. From Genoa to Pisa, about 100 miles eastward, there are some 80 tunnels. The same thing applies all through western Liguria. This explains why there is a variation in the bees at such short range. The ruggedness and barrenness of the mountain tops, offer a barrier to the bees.—Editor.]

Introduction of Queens

H. SPUHLER.

THE artificial and rational rearing of queens is indispensable to the success of the modern beekeeper, who with the new methods obtains as good and as prolific queens as are produced by natural swarming. Unluckily there are many instances of the loss of valuable queens in introducing, in spite of the many safe methods recommended, which happen to fail in the most important cases, usually because an insignificant circumstance has eluded the notice of the beekeeper.

In every case the temper of the bees plays a very important role; if they are in good humor everything goes well, whether we examine the hive from end to end or remove only one comb, whether we take away honey or introduce a new queen. But their disposition changes, highly influenced by outside conditions, the season or the weather on one side, their normal or abnormal state on another side.



Italian Luna di Miele—Honey-Moon

In the spring the bees are in better temper than in fall. When there is honey in the fields they are more tractable than in time of scarcity. In a normal condition, having a laying prolific queen, healthy brood and rich stores, they are more peaceable than in times of scarcity, of robbing, or while queenless or having a virgin queen.

Even when the queen has been accepted, the beekeeper cannot always be sure that the operation has been successful; the queen must not only be accepted, she must be *loved* by the bees. Love is the tie which unites her to the workers of the colony. I have observed cases where a young queen was accepted, but changed four weeks later. I suggest that such cases are much less scarce than the average apiarist thinks and that there are, every season, many queens changed in some apiaries, owing to an insufficient production of brood, caused by their being only tolerated by the bees instead of being loved by them.

The different methods of introduction of queens may be classified in two groups: The first group comprises the processes in which the new queen is introduced directly, unknown to the workers, the second those in which the worker bees are deeply conscious of their orphanage.

In the first group the processes are as follows: 1. As soon as the old queen is found, she is removed and replaced by the new queen. 2. A few combs are removed, and as soon as the old queen has been found and removed some bees from those combs are shaken down on the alighting-board and the new queen thrown down among them. 3. The attention of the bees is diverted from the new queen by sprinkling them with water, syrup or flour, or by smoking them vigorously. The first and second processes can succeed only when conditions are very favorable, when the bees are pleasantly disposed, when there is a good honey flow, when all the colonies have similarly the odor of the principal blossoms and the robbers are non-existent. In the third case, each worker is busy with her own troubles and does not attend to anything else.

Regarding the second group of processes, the requirement is that the bees be fully conscious of their orphanage, but that they be not yet supplied with queen-cells. These processes furnish the best results at any time or season. Usually the queens are introduced at the end of 24 hours, by using an introducing cage (such as is used in the United States and which I have made known in our country some 20 years ago). This cage is composed of a metallic screen closed with a stopper at one end of a cylindrical wooden tube containing food. The old queen is caught and placed in this cage hung between two brood-combs. The next day she is killed. The metallic portion of the cage is wrapped in paper soaked with honey and the cage is put back into the hive. At the end of two minutes, the cage will be filled with bees. It is then withdrawn, closed and exposed to full light, after removing the paper. The queen is introduced into the wooden tube, separated from the bees by a thin sheet of paper or foundation. At the end of 15 minutes this is perforated with a light wire and the bees soon reach the strange queen. As they are agitated and frightened and queenless otherwise, they readily accept her. The final stage of introduction consists in closing the end of the wooden cylinder with honey or candy. This is eaten by the bees of the colony and the queen is liberated. But it is never advisable to examine a colony in which a queen has been introduced, before a week elapses.

What are the causes that guarantee success? The cage has acquired the odor of the old queen which mingles with that of the new one. The caged bees bring to her the odor of the colony itself, so that there is little danger of suspicion towards her. But disturbances must be avoided and the queen must be released by the workers themselves.

Another good method of introduction consists in the use of a nucleus or fertilizing-box. But ours are built somewhat differently from yours. They are larger and contain a supply of powdered sugar mixed with honey or of granulated honey sufficient to last the bees two weeks. About 200 grams of bees (6 ounces) are placed in it with a 10-day queen-cell, and they are not allowed to fly before three days have elapsed. The air is furnished by screened openings in the floor of the nucleus, which may be closed with a sliding stopper. Another opening in the floor is to be used in uniting these bees to the queenless colony. This is temporarily stopped with a cork. When they are to be introduced to a full colony, after the queen is fertile, the entrance is closed and the floor opening stopped with only a thin perforated card. The bees must have an ample supply of provisions so as to be in normal condition. The nucleus is placed immediately over the brood-frames of the queenless colony, above the cluster. The latter readily ascertain that the nucleus above is a normal colony with queen, and after gnawing the card they are soon united in peace.

In a very short time the queen goes down to take possession of the larger space and devote herself to the greater task. If the advanced season prevents her from doing this, she may be readily compelled to move by taking away the nucleus and placing its combs cross-

LUNA DI MIELE
OREGGIA

"Honey-Moon"—Comb Honey

wise over the brood-combs of the colony. When the nucleus combs are of the same size as those of the hive, they may be readily exchanged. As a rule, in our German hives, separated by a single board, in a house-apiary, a queenless colony often joins its neighbor through a crack between the two, or if both have queens one of the queens may be killed and the two colonies peaceably united. The method just given is really not an *introduction* but the *uniting* of two colonies, the queenless colony being the larger of the two. Where all other methods fail, this gives good results.

When a colony has killed the first queen introduced to it, it will frequently refuse to accept another, especially if it has been queenless for some time. It is then useless to try further introductions. Mr. Cowan has mentioned an occurrence, over 20 years ago, in which five queens were uselessly sacrificed in this way. Mr. Bruennich reported an analogous case in the American Bee Journal of December, 1914. Ill-success should be attributed to abnormal conditions. The longer the queenlessness the more difficult the cure, because the bees become accustomed to their condition and lose even the energy and the desire to change it. They have grown old and nurses are lacking. Such colonies had best be treated by the method used with queenless colonies at the end of winter; they must be united to others. The nucleus method is the proper one for this purpose as the small colony is sufficient to save the other.

Zurich, Switzerland.

Disaster in Shipping Bees

BY GEO. F. HAYES.

ABOUT Aug. 8, 1915, I was confronted with the problem of moving three colonies of bees from a point in Illinois to southern Minnesota, about 300 miles.

My better judgment told me I should not take the bees. But I was going myself. I had given them pure queens, and had experimented with them; in fact, lived with them for two years, and I simply could not leave them behind. And, anyway, bees could be shipped successfully, for the bee literature said so.

Accordingly they were prepared for shipment. The covers were removed and wire-cloth nailed over the top. The entrances were closed in the same way. I tried to follow all the directions except I did not pour water upon the bees before shipping them. Each hive had two supers and enough honey to make the three weigh 250 pounds. They were started by express Sunday morning, and I was anxiously awaiting them Monday evening when they arrived.

All were powerful colonies when they were packed, but, alas! only one contained live bees when I opened them. The queen and a handful of bees had found a dry corner and huddled into it. In all of the hives the combs were broken down and the honey had run out at the entrances.

I was keenly disappointed and was bitter against the express company, for I supposed the disaster was due entirely to rough handling. However, I was not discouraged. I was determined to save my pure-bred queen and her handful of golden bees. I immediately bought a colony of black bees not more than three blocks from home. In the cool of the morning I closed the entrance with a cloth and carried the hive (which was heavy) home on my shoulder. I intended to replace the black queen with the golden Italian.

When I reached home I was again rudely disappointed to find that three of the combs had broken down and the bees were drowning. The hive had not been closed more than ten minutes and it had had the most careful handling. However, I saved enough bees to make a strong colony by winter.

Experience is a dear teacher but a good one. I learned that bees cannot be shipped in hot weather if the hives contain honey. In a few minutes a confined colony will generate enough heat to melt down the heavy combs. For this bit of information I sacrificed three colonies of bees, paid $6.00 to the express company and $2.50 for that last colony; and in addition I had to apologize to the express agent for falsely accusing his co-workers of carelessness.

If this enables some brother to avoid a similar experience I will console myself with the thought that my sad experience was not in vain.

Elgin, Minn.

Clipping Queens

BY J. L. BYER.

THE time for the first general overhauling of colonies here in the North is here again. The hunting of the queens so as to be sure that all are clipped constitutes the greatest part of the work at this examination. Please note that I say "all," for unless all of the queens are clipped I hardly think it worth while to bother taking off the wings of any.

On page 98, March issue, the question is asked from Indiana, why some writer, un-named, said that all should be clipped, and further added as a sort of mystifier, "If you don't know why try it and you will learn why." Dr. Miller, in reply, says that he does not see why it would not work all right to have only part of them clipped. As I have more than once made the statement both in private and public that it is necessary to have all clipped or none, a word in explanation is necessary.

First, I want to say once more what has already been told to beginners hundreds of times, that clipping queens in no way stops swarming; it simply provides a way to control this problem, and in the case of outapiaries I think that nine out of ten apiarists would not know how to manage the business unless queens were clipped. Under normal conditions, as all bee-keepers of experience are aware, the old queen issues with the first or prime swarm, leaving young queens developing in the hive. If the swarm issues with an unclipped queen, and the apiarist is not there, of course bees, queen and all are lost. If the swarm issues with a clipped queen, quite often after the bees have returned to the hive the clipped queen will find her way back into the hive again and the process of swarming will be repeated again the next day. I have heard of swarms coming out this way for three days in succession. However, in the event of the queen being lost during the first or subsequent swarming of the colony, the bees will return to the hive and no swarming will again be possible until the first young queen hatches and goes with them. But as there will be from six to ten days of interval before a young queen hatches, the apiarist will have time to discover that things are not as they should be in the hive, and measures will be taken to handle the situation and prevent any more swarming with the chance of losing the bees. Under normal conditions a swarm may be expected to issue in about nine or ten days after first swarming, in case the old queen was then lost, but sometimes swarms are held back for a few days on account of bad weather, and then the second swarming occurs earlier, as during the period of waiting for fair weather the started queen-cells will be maturing all the time.

Of course, this condition is more apt to occur in outyards where no one is in attendance, but even for a home apiary the practice of clipping is a great labor saver. Who has not had swarms issue on a real hot day, and probably cluster on the top of a tree? Perhaps to make things more aggravating the bees persist on alighting on a tree trunk or large limb. With clipped queens all that is necessary when a a swarm issues is to get a hive ready, and while the swarm is in the air lift off the parent hive and set it aside, placing the prepared hive on the old stand. The queen of course has been picked up and placed in a wire-cloth cage.

As the bees miss their queen and come rushing back, how simple and easy to just place the queen at the entrance and allow bees and all to rush in! Supers from the old hive, including bees and all, can be placed on new hive on the old stand, and the job is done. All this is common practice with experienced beekeepers, and is simply given for the benefit of beginners constantly joining the craft.

But to return to the question as to why it is necessary to clip all, really the temptation is strong to repeat the advice "try it and learn why," for by so doing the matter would be cleared up so much plainer than by words, if things turned out as they did twice in my experience, when part of the yard was clipped and we happened to have heavy swarming seasons. A colony would swarm having a clipped queen. Just about the time we picked up the queen in a cage and thought of changing hives around, out would come a swarm with unclipped queen, and of course all would go together. It was impossible to separate the bees with any degree of satisfaction, and one never was sure but what the unclipped queen might be shaken with the bees if any attempt was made to divide them. Swarms will sometimes mix up when all have unclipped queens, but they will not mix half so badly as when part are clipped and part unclipped. They will *always* go together if two swarms issue at nearly the same time, one with an unclipped queen and the other clipped, and that cannot be said when none at all are docked.

At any rate, the two seasons we were in this dilema caused us to come to the conclusion that we must clip all or none, and I feel sure that if our Indiana correspondent has a fairly large apiary and will this spring clip half of the queens and leave the rest alone, granted that the season will be bad for swarming, he will conclude that my advice is practical.

Markham, Ont.

No. 16.—The Honey-Producing Plants

BY FRANK C. PELLETT.

Photographs by M. C. Richter, San Francisco.

IN this our 16th installment of the honey plants, we will consider some which are frequently reported as sources of nectar on the Pacific Coast. Some of them occur in the East, but are seldom mentioned as sources of nectar east of the Rocky Mountains. For the photographs which appear this month we are indebted to M. C. Richter, of San Francisco.

PIN-CLOVER OR FILLAREE.

The pin-clover, alfilaria or fillaree, *Erodium cicutarium*, is widely distributed in the old world, and in this country has been naturalized from Europe. It is especially well known on the Pacific Coast from British Columbia to southern California. There it is said to be one of the most valuable wild pasture plants.

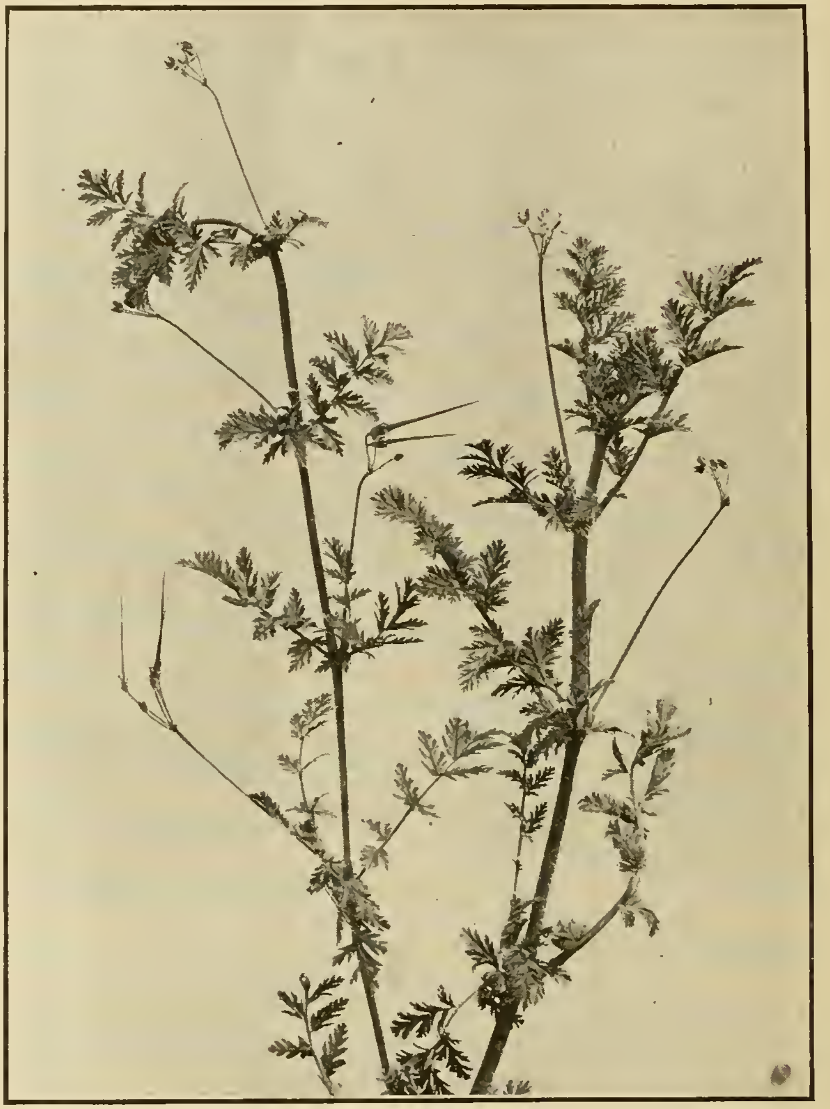


FIG. 73.—FILAREE OR PIN CLOVER—A COMMON HONEY-PLANT IN CALIFORNIA

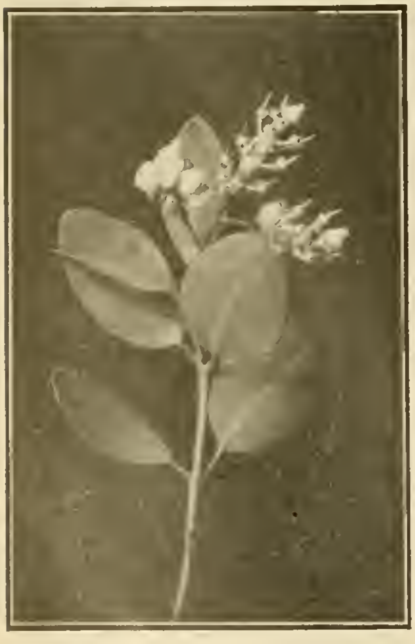


FIG. 74.—MANZANITA BLOSSOMS

It is also called pin grass and Heron's bill. It has a long period of bloom, beginning in February or March in California, and in some places continuing through the summer. It produces an abundance of pollen and considerable honey of good quality. In Gray's botany it is listed as "stork's bill," and is mentioned as scarce in New York and Pennsylvania. It is recorded as occurring in Alabama where it apparently was carried with railroad ballast. June is given as the blooming period in the vicinity of Mobile.

It is also known in several places in Connecticut, where it is said to bloom in May and June. Prof. Pammell states that it is abundant in the dry soils in the Salt Lake basin and from Colorado to Texas. The seeds cling to the wool of sheep and this aids in its wide distribution.

Figure 73 shows the plant with blossom and seed pod. It is from the peculiar shape of the latter that it gets the names of "stork's bill" and "Heron's bill."

MANZANITA OR BEARBERRY.

Figure 74 shows the blossoms and leaves of the manzanita, which is seldom heard of as a honey-plant east of California. The following information is copied from Richter's "Honey Plants of California:"

"*Arctostphylos*, manzanita, bearberry. Throughout coast ranges, Sierra Nevada foothills, and San Bernardino Mountain (2000 to 9000 feet), November to February.

"The honey is amber and of excellent flavor, much like manzanita itself (Colusa county); pollen. San Diego county reports a white honey from the manzanita. One of the most important honey-plants to induce bees to early breeding. In some parts of Monterey, Colusa and Eldorado counties a 20 to 40 pound surplus is obtained, and on very warm days (Monterey county) nectar can be shaken from the bloom. A beekeeper from Applegate reports it to be his best honey yielder."

The *Arctostphylos uva-ursi*, bearberry or beargrape, according to Gray, occurs on the rocks and bare hills from New Jersey and Pennsylvania to Missouri and far north and westward. It is also said to be common in Europe and Asia. It is recorded in the local lists of plants of Connecticut and Ontario.

It is a little surprising to us to find plants which are so highly regarded in California reported from so many eastern localities, although, probably because nowhere abundant, they are not known as sources of honey. Although Richter's list does not give the species from which their honey is secured, it is probably not *A. uva-ursi*, which is found in the East, but *A. pungens* or *A. tomentosa*, or other species peculiar to the west coast.

The leaves of the eastern species are much used in medicine. It is said to be an astringent tonic used in diseases of the liver.

MUSTARD.

Figure 75 shows the common yellow mustard, *Brassica campestris*, which is common all over North America and in Europe. The black mustard, *B. Nigra*, also has a very wide distribution in Europe and America. There are about 50 species, including the closely related cultivated varieties of cabbage, turnips, rutabagas and mustard. All produce some nectar, and in some localities they are an important source of nectar. In parts of California, notably the Lompoc valley, mustard is grown commercially for seed; much honey is stored from this source. The honey is said to be light in color and mild in flavor. Apparently there is much variation in the amount of nectar, according to climatic conditions. In any locality where it is sufficiently abundant mustard can be expected to add something to the product of the apiary.

GORSE OR FURZE.

Gorse or furze *Ulex europaeus* (Fig. 76) is a spiny evergreen shrub with yellow flowers that is common in Europe where it is said to be used to some extent for fuel and fodder. I can find but few references to it in this country. In California it is said to bloom during all seasons, although much more freely in spring. Richter reports it as a very good honey-plant on the hills of Marin county.

Atlantic, Iowa.

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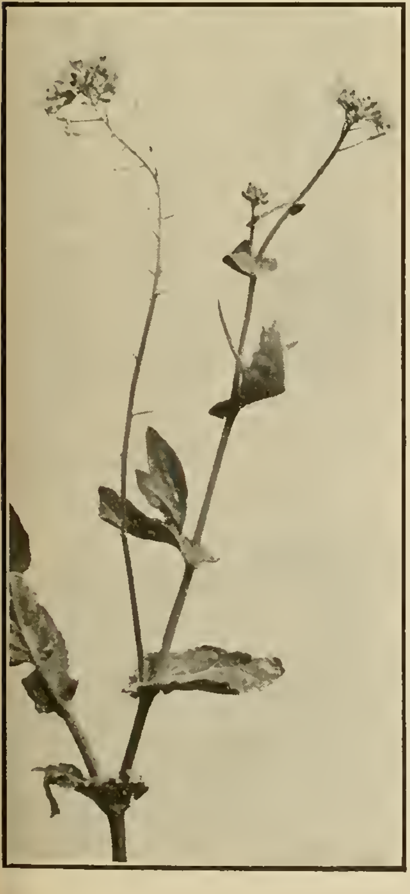


FIG. 75.—COMMON YELLOW MUSTARD

Swarm Prevention for Comb Honey

BY GEO. W. STEPHENS.

ONE of the greatest problems confronting the man who would produce comb honey is a system of management that will effectually prevent swarming and hold the bees together and keep them at work storing honey without sulking or desiring to swarm; a plan that requires little labor and that can be used in an outapiary for comb honey without watching for swarms. From the viewpoint of the average beekeeper bees swarm for lack of room for the queen to lay to rear more brood to store more honey to rear more brood to pester and torment their keeper. If a colony of bees is provided with plenty of room, however, and all other conditions are ideal, they have no valid excuse for swarming; and if they do swarm under such ideal conditions it may be attributed to the innate contrariness of bee nature.

Dr. Phillips, in his book on "Beekeeping," says: "The lack of adequate space for breeding is a common condition in colonies from which swarms issue." This and a little experience I had two years ago have helped to confirm my suspicions that a crowded condition of the brood-nest is the principal and primary cause of swarming. I was sent for to take a colony of bees from the attic of a farm house. They had been in that attic for four years and had not in all that time cast a swarm. I found them in a corner near the chimney, and their combs filled a space a yard square and hung down from the rafters fully two feet. They certainly had an abundance of room to spread (18x36 feet), and apparently had not thought of swarming. I presume they might have swarmed when their "hive" became crowded if they had not been removed.

Swarming may be almost entirely prevented by certain timely manipulation, and it is up to the beekeeper to adopt a system that will best serve the purpose. Almost any system of management that will hold the colony together during the honey flow will result in an increase of surplus honey, but most of the plans recommended and practiced by many beekeepers demand too much time and labor. For instance, opening hives and cutting out queen-cells once a week, as some do, is no small job, and frequently leads to sulking and does no good because the condition that causes swarming is not changed thereby. Watching for and running after swarms is a great waste of time. Jumping the parent colony from one side of the swarm to the other every few days to catch the flying bees is not only a waste of time but of main strength and awkwardness besides.

Shaken swarms, like natural swarms, unless the brood is united with the swarm, divide and weaken the working force of the colony so that the swarm does not get the benefit of all the brood as it emerges, and it is thereby deprived of the usual and necessary daily reinforcement of young bees to take the place of the daily loss of old bees; consequently the swarm constantly dwindles for three or four weeks before there are any young bees to keep up its strength. A swarm is not as strong and does not do as good work in the sections three weeks after it issues as during the first week. By that time it has spent its gathering force, the honey flow may be drawing to a close, and there are a lot of unfinished and lightweight sections in the supers with not enough bees to finish them; whereas if the strength of the colony had been maintained and the bees and brood held together the sections would have been well filled and sealed, and comparatively few, if any, unfinished ones would have been found.

Now, to hold the bees together and keep them contentedly at work storing honey and have no swarming or sulking it is necesssary that they have adequate breeding space in the proper place and given at the right time. Some try to prevent swarming by adding a super of sections above an excluder, but this will have no effect because the crowded condition of the brood-chamber remains the same.

I have tried out and adopted what was to me a new plan for the production of comb honey. It may be that somebody has tried and abandoned something similar, but I am not so informed. The late Oliver Foster, in an article in one of the bee-papers some

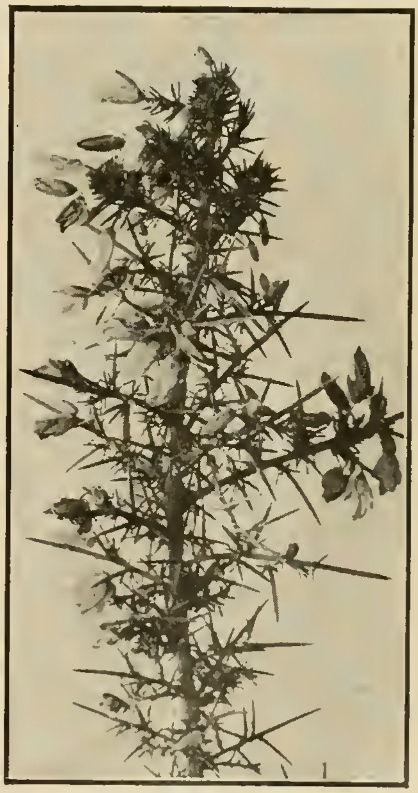


FIG. 76.—GORSE OR FURZE

years ago, wrote that shaken swarms ought to have a restricted access to their brood, and that they would be more contented and would not swarm out. Acting on this idea, which had been developing in my mind for some time, I prepared some hives and tried the following scheme to my entire satisfaction. It is needless to say my enthusiasm has gone up several degrees.

This is the plan: Prepare two bottom boards for each colony to be operated by cutting a slot about ⅜x5 inches in one of the side-cleats of each board equi-distant from the ends. Place the colony on one of these boards, closing the slot temporarily with a piece of lath tacked on. Now follow Mr. Doolittle's plan, and in early May set a hive-body of empty combs on top with a queen-excluder between. This will prevent the brood-chamber becoming congested and will delay swarming as in extracted honey production. Then just as the main honey flow opens I deviate somewhat from the Doolittle plan, and instead of separating the brood from the bees, I lift off the top story and set it on the other bottom-board by the side of the first one so that a slotted bridge between them will form a passage from one hive to the other through the slots. A strip of excluder-zinc is nailed to one side of the bridge to hold the queen where she is put. The brood-section is moved to one side enough to allow the other section to take its place on the stand.

Find the queen and put her and a frame of unsealed brood in the new hive, or shake the bees out if the queen cannot be found readily. Close the entrance of the brood-section and let the bees use the new entrance, now at the old location. Slip a piece of section under the back end of the brood-section to raise it from the bottom-board an eighth of an inch, or raise the cover slightly in order to give the brood sufficient ventilation. Put a couple of supers of sections on the new hive with an excluder under them, and the bees will do the rest. The capacity of the hive is now doubled, the colony has not lost its brood and has plenty of room for breeding and storing. The bees will go to work with a rush and transfer the honey in the combs to the sections and the queen will fill the hive with new brood, while the old brood in the other hive will be well taken care of and none of it lost. The natural daily loss of flying bees is constantly recruited by the emerging young bees from the old brood-chamber, which will maintain a rousing colony to the end of the honey flow without a break, and there will be no dwindling during the next three or four weeks, as is the case when the brood is separated from the swarm.

Before the brood has all emerged, say in about two weeks, I make a reverse shift by returning the queen to the original hive, transferring the supers and opening the closed entrance and closing the open one. This causes the colony for the second time during the honey flow to work with the vim and energy of a prime swarm during its first week. If I want increase, after a few days I set the queenless section on a new stand, giving the brood a queen or a cell and let them build up, thus making my 100 percent increase. If increase is not wanted I let the brood all emerge and insert a Porter escape for a day or two, then set the empty combs away to be used in the same way the next season.

And what is the result? Well, I have extra-strong colonies at a time when they will do the most good, and, as Mr. Doolittle says, "Very strong colonies will store a surplus of honey when weak or only fairly good colonies will hardly make a living." Compared with natural or shaken swarms one can get an average of anywhere from 50 to 100 percent more honey and 100 percent increase of colonies or no swarms at all, as he chooses. The sections are invariably better filled and sealed. The plan has the advantage of two brood-nests—one full of brood and the other being filled to hatch later. If it is true, as claimed, and I have no doubt it is, that too many young bees in the hive will create an unbalanced condition and discontent of the colony, the double hive affords the young bees a place to stay out of the way of the workers until they are old enough to go to work, as they do not come out of the brood-section until they are several days old. I have kept bees on a side-line for "going on" 29 years, and I never have seen a colony too strong to do good work if it has room according to its strength.

There is, of course, some work to this plan, but a man knows what he is doing and what the bees will do every time, and every move is a profitable one, considering the extra amount of honey he will get; even the last move gets a new colony of bees from every hive, worth $5.00 each, and the faster one works the more he will make and the sooner he may become a millionaire.

If any beekeeper would like to have his bees do something worth while, and then some, in comb or extracted honey, in either eight or ten frame hives, let him try the Stephens twin-hive method. It is sure and easy, and there is no rainbow chasing attached to it.

Denison, Iowa.

Why and How I Paint Comb Foundation

BY EDWARD HASSINGER, JR.

My experience with painting comb foundation with wax is limited to two years, and 3000 Langstroth frames for brood-combs and extracting combs.

WHY I DO IT.

First—To secure as nearly all perfect worker-comb as it is possible to get in Langstroth frames.

Second—The bees will enter and occupy whole supers of this painted foundation as readily as they do supers of all drawn combs. There is something about it that is very alluring to them; they will draw it into comb in the smallest kind of a honey flow and will fasten the foundation to the end-bars before drawing the comb. In a heavy honey flow I have repeatedly seen whole supers drawn into comb ⅜-inch in length in less than 24 hours and some honey stored in the cells. If any one claims that the bees would not take time to thin down the base of the cell walls in a heavy honey flow I should say he had a freak colony of bees under his observation.

Third—I have reason to believe that it pays in dollars and cents. More definite statements could be made on this subject, if some one will determine just where the dividing line may be drawn between the voluntary and involuntary secretion of wax in the average colony of bees.

Can any one prove that a colony of bees with all drawn comb in the hive will produce more wax involuntarily than is required to seal the ripened honey, etc.? If they do, what do they do with it if they deposit it all in the hive in the form of brace comb? I am then satisfied that it does not amount to much. Finding wax scales on the bottom-board does not prove that the bees had no use for them in the supers. The question is: Would the bees carry their own wax scales outside of the hive simply because the combs were all built in the hive?

A drawn comb Langstroth size contains about five ounces of wax. A sheet of medium brood foundation contains two ounces of wax. A sheet of light brood foundation contains one and three-fifths ounces. It takes no more time to paint a sheet of light brood foundation than it does to paint the medium brood foundation; therefore, the advantage is in favor of the light brood foundation.

If I add not less than one ounce of wax to each sheet of light brood foundation this would make the sheet two and three-fifths ounces in weight, or one-fifth ounce more than half the wax required for a full drawn comb. One hundred and twenty-five pounds of wax would make 1000 sheets of medium brood foundation at a cost of 11 cents a pound or $13.75, and it takes only 100 pounds of wax to make 1000 sheets of light brood foundation at 13 cents a pound or $13.

The balance in favor of the light brood foundation would be 75 cents in cash and 25 pounds of wax, not counting the labor of painting this wax on the foundation, but as it is assumed this work would be done anyhow and enough more wax added to equal one ounce per sheet.

Assuming that it takes 10 pounds of honey to produce one pound of wax, and if honey is worth 10 cents a pound, then it cost $1.00 to produce one pound of wax. Then by buying wax at 30 cents a pound a saving or gain of 70 cents a pound is made.

One thousand sheets at one ounce per sheet would require 62½ pounds of wax; same at 30 cents a pound would be $18.75. It would cost $62.50 worth of 10-cent honey to produce this wax, the balance in favor of buying the wax and painting it on the foundation would be $43.75 plus the 75 cents that it costs less to have 1000 sheets of light brood foundation made, and have it better liked by the bees than any lighter or heavier foundation made by machinery. The price of labor deducted from the above mentioned figures would still leave a favorable balance. It takes from 1½ to 2 minutes to paint one sheet of foundation of Langstroth size with one ounce of wax.

This work should be done in the winter when time is not worth so much; in fact, it must be done in cool weather, the foundation should be cold and the wax hot for best results.

I have my foundation made to order and have it fit the frame less one-eighth inch from each end-bar, and one-fourth inch from the bottom-bar, the most perfect all worker comb is secured with a space of three-sixteenths inch between the foundation and the bottom-bar.

The frames should be all wired and the foundation fastened, and the wires imbedded in it before starting to paint it with wax. I do not want any combs without being wired, and I believe no argument should be advanced in favor of trying to get along without wires.

I use a small two-burner oil stove and a tin pan about 8x8 inches wide, 3 inches high. A wire screen is fitted into the bottom of the pan in such a way that the screen does not touch the bottom of the pan; this is to hold up the brush. Then wedge a square stick in between the sides of the pan at the top; the wedge should be in the center of the pan and nailed through the pan into the stick; this is to brush the surplus wax out of the brush before using it. The brush is an ordinary paint brush 3 inches wide, with the hair or bristles of the brush 4 inches in length.

About half-way between the top and bottom of the hair are placed two sticks, one on each side of the brush crosswise of the hair. Each stick should be 4 inches long, ¾ of an inch wide, and 3-16 of an inch thick; they are nailed together through the hair of the brush tight enough to force the hair of the brush all in one narrow straight line, at the same time making the brush one inch wider at the bottom. To keep the sticks from slipping down fasten them to the handle with a tack and a piece of wire or a crate staple.

With the brush fixed in this manner much better and faster work can be done with little danger of closing the bottom of the cells with wax if the proper amount of wax is brushed from the brush before using it. If many cells are closed with wax at the bottom it may result in drone-comb being built on the spot.

After using the brush for some time the bottom of the brush will form into a curve; this is an advantage in applying the wax by brushing against the curve with the first stroke or two and then reversing the brush. Use the same form to hold the frames with the foundation that you use for imbedding the wires into the foundation. Only practice can teach you just how much pressure to use for a uniform distribution of wax over the side walls of the foundation.

The temperature to keep the wax at depends upon how fast you use it and the temperature of the room. The colder the foundation and the warmer the wax, the better it works. Have the wax broken in small pieces, and add some continually as needed.

I have sent a copy of the above to Mr. Henry Vogeler, as he has a patent on the process. I asked him to comment on my article. He comments as follows to which I reply again:

"You are ahead of other statements, *i. e.*, 8 or 10 sheets drawn out in a day. I had Dadant's extra thin surplus grade comb foundation, Langstroth frame size, over 15 sheets to the pound, and when painted only on top I had over 13 sheets to the pound. I paint on a board same size as sheet and have it wet. Your brush is too long about two inches. I got the best. Wax should be melted, not hot. I paint only on one side. I don't imbed wire. I wax the wire and weave it in, two on one side and two on the other. You are too slow to paint ten sheets in six minutes.

"The beeswax scales 1-5 inch wide, 1-180 inch or less thick will likely give 75 percent more comb honey and no fishbone in the center.

"Process to make beeswax scales has been allowed in Patent Office. Royalty one-fifth to one-tenth of a cent per Langstroth frame size sheet."

Oakland, Calif. HENRY VOGELER.

REPLY TO MR. VOGELER'S COMMENTS.

It is quite evident that Mr. Vogeler uses only a fraction of the amount of wax that I use per sheet of foundation. Therefore, the difference in results and the difference in the time for painting. In warm weather it is necessary to wet the board.

Evidently Mr. Vogeler does not get the idea of my brush. It is only two inches long below the sticks as explained before, and the sticks help to feed the liquid wax for a longer time, because it stays hot longer between the sticks.

I cannot agree with Mr. Vogeler's statement of 75 percent more comb honey with no fishbone. I agree with the no fishbone (midrib) part, but the best way to make a comparison between the painted and unpainted foundation would be by stating definitely how much wax by weight is added to a certain size sheet of foundation if enough wax is painted to equal two-thirds of what the same size would weigh in drawn comb. Then I should say that it was equal to drawn comb or very nearly so. Therefore, the value of wax-painted comb foundation must be determined by the amount of wax painted on it by weight.

Many beekeepers told me personally at the conventions that they were convinced it was a good thing, and wanted to know if the manufacturers could or would have foundation painted with wax and sell it as such, especially for *comb honey*. Manufacturers will please take notice.

Greenville, Wis.

[There is need of an explanation of Mr. Vogeler's last statement, concerning the patent on beeswax scales. Mr. Vogeler took a patent, years ago, on painting the sheets of foundation in a manner similar to that mentioned by Mr. Hassinger. But the wax scales patent is another. This consists in a method for manufacturing artificially wax scales for the bees to use in building comb.

To the enquiry of Mr. Hassinger as to whether bees produce more wax involuntarily than is needed to seal the combs, we will reply that the consensus of opinion among students is that the bees produce wax involuntarily only when they are compelled to remain filled with honey. Bees that gather honey from the blossoms, and bring it to the hive to deposit it at once, produce a very inconsiderable amount of wax. But when the crop is so heavy that the cells are all filled, the young bees remain loaded with honey until wax is produced, while the field bees keep on bringing more. Then is the great amount of wax produced which is needed to build more comb to store this surplus. It is a very wise arrange-

GREAT PICKING SCENE AT E. J. BAXTER'S AT NAUVOO, ILL.
(See our first article in this issue.)

ment. We do not believe the bees waste any wax except in extraordinary circumstances, such as the breaking down of the combs, when we have seen it plastered indiscriminately on the wall of the hive, in little lumps. This was evidently because the space where combs could be built was in such a mess that it could not be occupied by the builders.

When a swarm emerges, the young bees in it are often loaded, not only with honey, but with wax scales ready to emerge and that explains why superficial observers believe that wax costs but little to produce at swarming time. The honey consumed for two or three days previously is not taken in consideration, by them.—Editor.]

Honey as a Medicine

BY A. F. BONNEY.

So much has been said about honey as a medicine that I finally became curious, and having investigated thoroughly give the result to the fraternity.

In the United States Dispensatory, which is the reference book used by doctors and druggists when drugs and medicinal substances are concerned, we find it stated that: "Honey possesses the same medical properties as sugar, but is more disposed to affect the bowels. Though largely consumed as an article of food, it is seldom employed medicinally except as a vehicle. Its taste and demulcent qualities render it a useful addition to gargles, and it is sometimes employed as an application to *foul ulcers*."

This compels us to look up sugar, and under the head of Saccharum we find the following statements: "Medical and Pharmaceutical Uses. As a demulcent, cane sugar has been used to some extent in *catarrhal affections*, especially of the respiratory tract...... According to Dr. S. Meslach (now unknown to fame), glucose, when given in doses of 6 to 6½ ounces a day in the form of the concentrated syrup, acts as a powerful diuretic......and is useful in the treatment of *cardiac dropsy*.

In pharmacy, sugar is used to render oils miscible with water, to cover the taste of medicines........"

I wish to state that many substances are retained in the Dispensatory which are practically no longer used as remedies for disease. Wormwood is one of them, and why it and others are retained I cannot understand. Whisky held an honored place in the venerable volume for a century, but has been eliminated, and sugar is no longer used as a remedy for foul ulcers and cardiac dropsy.

As a matter of 90 percent of human ailments will "get well" if left severely alone, I shall not discourage the use of honey as a cure-all, for it is the least harmful of all the vaunted "cures," while if it becomes as popular as whisky the sales will increase tremendously. It does not matter that I consider it a poor dressing for the hair, not a successful foot ease, and lacking value as a remedy for appendicitis. Our object is to sell honey, and it will be impossible to falsify ads to aid that object as much as is done for many other things, but this advertising a delicious food product side by side as a feed and a remedy for foul ulcers is repugnant to me, and I honestly believe that for every ounce sold as a remedy we injure the sale of ten as a food or table sweet.

I have before me a card issued by a neighbor, which reads as follows:

"Honey is Nature's one pure sweet."

"Honey is both food and medicine."

"Money invested in honey is an investment in health."

"Honey is cheaper than doctor bills."

"Eat plenty of honey and you'll save doctor bills."

"If you want *good* honey *every time* buy it of ———."

This card was vastly better, as a truthful production, with only the first and last lines, to-wit:

Honey is Nature's one pure sweet.

If you want *good* honey *every time* buy it of ———.

Who, besides honey producers, may I ask, vaunt their product as medicinal agents, and, again, why is it necessary? Does it do any good? Does it sell a pound of honey? People buy honey because they want it, and if not for table use they will practically never buy it for other purposes. Once in a great while I sell a pound to fill a demand for something for a cold, but 99 percent of my honey is sold to be eaten, and because the people want a delicious sweet.

Buck Grove, Iowa.

Net Weight on Sections—Objections of a Practical Beekeeper

BY FRANK COVERDALE.

It is very plain to me that the Government should not require the stamping of the net weight on the sections of comb honey, because it is an impossibility to accurately perform that requirement.

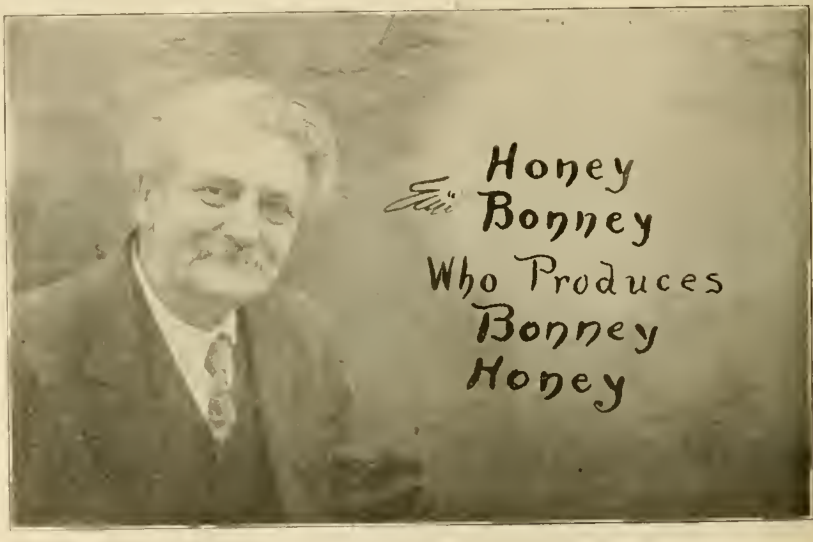
The producer of comb honey has no control of how many ounces the bees will put into each section. The net-weight law should be forced upon those only to whom it is applicable. The producer who has secured 20,000 sections has a job the accurate doing of which is unthinkable. And if those sections are not stamped correctly how is the consumer to know what he is getting unless he asks the retailer to weigh them again, for they may vary from ½ to 6 ounces?

The producer of extracted honey can readily fill all the requirements of the law, like any other packer of commodities, even to the fraction of an ounce. But the producer of comb honey can't change its weight. A ruling for the poultry owners to mark each egg, or for the farmer to mark each ear of corn its actual or minimum weight would be no more of an impossibility. Neither is there any method by which he can compel the bees to help him one iota in securing greater uniformity. It is not to be wondered that so many of the sections put upon the market vary from the weight marked upon them. I have been through this trial and call it a farce at best.

I have come to the conclusion that the only thing to do is to appeal to the Government to set aside all rulings on the comb honey put upon the market and let it sell by the piece, just as they retail apples, or melons, or oranges, or pineapples. For the producer has no more control of the weight of a comb of honey than he has of cantaloupe or a pineapple. The buyer must use his eyes in either case and judge of the weight or value of what he purchases. If he does not rely upon his judgment, he can always require the retailer to ascertain the weight for him.

I for one am in favor of appealing to the Government to set aside this impossible requirement, which if tested out would probably not stand in the courts, for the simple reason, already mentioned, that no one has any control upon the net weight of each package.

Delmar, Iowa.



A. F. BONNEY THE ORIGINATOR OF THE HONEY STICKER

Comb Honey and the Federal Net Weight Law

BY FRANK RAUCHFUSS.

[Among the producers of comb honey on a large scale who are able to see both sides of this question, none is in a better position to give the consumers' side than Mr. Frank Rauchfuss, of Denver, who has handled hundreds of carloads of honey for the Colorado Honey Producers. We sent him a copy of Mr. Coverdale's letter and insert his comments, thus giving both sides of the "net weight" question.—EDITOR.]

QUESTION :—Is the application of the net weight law to comb honey justifiable ?

My answer would be, *most assuredly*. I will state a few reasons why, by showing up some of the weak spots of honey marketing conditions, past and present.

Comb honey in glazed sections was being sold by weight. The consumer ordering a pound of honey and generally paying a fancy price for it, 25 to 30 cents received from 8 to 9 ounces of actual honey, comb included. This looks pretty much like a case of selling glass and wood and throwing a little honey in the bargain.

Is it any wonder these consumers got the idea that comb honey is a luxury that only the wealthy can afford? We have seen some cute tricks played by producers to get the best of the other fellow; one party used tall two-piece sections, to make the honey weigh up, the bottom piece of the section was made of *⅜-inch lumber*.

Others in localities where comb honey was sold by the case, adopted narrow sections, inducing the building of a thin comb, so as to give as little honey as possible and still make a fair showing.

We have seen cases of non-separatored honey, the front sections facing the glass looking all right, but woe to the fellow who would buy by front appearances, back of this front could be found pot-bellied sections weighing 20 ounces, next correspondingly lean ones weighing only 12 ounces; in some instances two or three sections would be found built solidly together, so they had to be handled and sold as a unit.

We don't want to imply that separatored honey could not be found just as objectionable, because there are some beekeepers who would not hesitate to put white and dark honey, light and heavy sections and even culls in the same case; to the utter disgust of every person who has anything to do with such a case thereafter.

With such conditions existing in the principal markets of the country, the dealer should not be blamed for refusing to handle comb honey.

It is a well established fact, that no commodity can be handled satisfactorily in large quantities and with profit to the producer of it, unless it is conscientiously graded and packed in uniform packages. The closer the producer can come to the ideal of having all sections of honey in a case practically alike in color, weight and finish the better price he will realize, when a fair minded dealer finds that he can absolutely depend upon said beekeeper's pack.

Now, let us see what effect a reasonable enforcement of the federal net weight law has in bettering the above mentioned conditions.

The beekeeper who wishes to put up comb honey in glazed sections still enjoys this privilege, but he has to mark each section either with the actual *net weight* or a certain adopted minimum net weight. The consumer, who is willing to pay for glass, can readily see about how much actual honey he gets.

The beekeeper who previously used thick lumber in his sections will not see any profit in doing so any longer and adopt regular stock material.

The production of thin-comb, light-weight sections is also likely to be dropped, since net weights must be stated.

Non-separatored honey will likely be a thing of the past in many markets, as it will be very difficult to comply with the net weight law when *packing a poorly produced article*. We realize that some beekeepers do produce a very satisfactory article of non-separatored comb honey, but it cannot be denied that their number is surprisingly small.

The majority of beekeepers who do produce a good article of comb honey and who are willing to grade and pack their honey in an honest and business-like manner, will no doubt soon realize that *the federal net weight law does not increase the cost of production materially* (if weighing and grading is done in large quantities the cost of weighing will not exceed two cents per case), while the elimination of the aforesaid objectionable features cannot help to but ultimately bring prices to a more uniform basis.

By grading and packing our honey right, by enabling the consumer to readily find well-produced honey, which is properly marked, attractively displayed and is sold at a reasonable price; by our working either co-operatively or individually to accomplish this end and by supplementing it with well directed advertising, we should soon be on the way of seeing pure honey in one form or the other on the tables of the majority of our people.

Denver, Colo.

That Net Weight Law

BY DR. C. C. MILLER.

IN considering the law as to marking weight on sections, the first thing we must do is to dismiss from our minds the thought that the law is made for the benefit of the producer. It is made for the benefit of the consumer. That is as it should be; the greatest good to the greatest number; and the number of consumers is twenty, fifty, a hundred-fold more than that of the producers. If the consumer gains more than he loses by having the weight stamped on the section, then the section should be so stamped, "and there's an end on't."

No use to say that there's any impossibility about weighing each section. Thousands upon thousands of sections have been accurately weighed; in fact, in years gone by the great majority of them were thus weighed. The fact that they were weighed by the grocers doesn't change the case; if a grocer could weigh them so could a beekeeper.

"Oh, but the grocer can weigh them one at a time as he sells them, and the beekeeper with 1000, 10,000, or more to be weighed all in one lot would be swamped." Well, now, which will consume the greatest sum total of time, to weigh 1000 sections all in one job, with everything in the most convenient shape for it, or to have a grocer make a separate job of each one, in many cases adding the time of the customer who stands waiting?

"But do you realize that a man with 20,000 sections to be got ready to ship at a given time would be utterly unable to get through so long a job in the given time?" Well, there is no law against hiring extra help, and there are plenty of people waiting to accept such a nice little job as weighing sections.

Of course, when the grocer weighs the section he gets his pay for that extra work by the extra profit he gets on the section. If the weighing is shifted from the grocer to the producer, and if the producer can do the weighing as cheaply as the grocer, then the cost to the consumer should not be increased.

"Well, if you insist upon anything of the kind, the beekeepers ought to be paid for the extra work, while the fact is that they'll not get a cent more, and the result will be that they will be driven out of the business, and there will be no comb-honey produced. Do you want that?" That would be rather deplorable, and if you can establish it as a fact—or if you can establish the fact that consumers would lose more than they would gain by the stamping of each section, then it is a pretty clear case that the law should be repealed.

It is pretty certain that it is to the advantage of the buyer to know just what he is buying and how much, but if he must pay too much for that knowledge he will be the loser. If the present law results in raising the price to the consumer, then it is hardly a good law. It looks a little as though it would thus result when comb-honey producers are thinking—or at least talking—about giving up comb-honey production. Should any considerable number of them do so, it must inevitably make comb honey scarcer, and so more expensive to the consumer. But there is a possibility that these beekeepers are more scared than hurt, and that there will be no diminution in the number of comb-honey producers, if in the long run they find that the law puts no burden upon them for which they will not receive a fair compensation.

It is on these lines that the matter should be considered, and from the standpoint of the consumer rather than the producer, and in no case should there be any hint as to the impossibility of carrying out the present law to the strictest letter.

Marengo, Ill.

Season in Southern California

BY J. E. PLEASANTS.

HONEY-PLANTS are coming into bloom early here this spring. The bees are increasing rapidly and swarming in the valleys. Orange bloom is coming in gradually instead of all at once as is often the case. This is very favorable to the bees in the orange belt, as the flow will thus be prolonged. Alfilaria and other minor early spring nectar-producing plants have been in bloom for some time. Black sage is beginning to come in, in the mountains. We have had a heavy winter rainfall; the principal thing here in order to produce a crop.

Now with favorable spring weather the outlook is good. Bees are in better condition than last year, generally speaking; there is less European foulbrood. The disease mentioned in the January issue of the American Bee Journal, which affected the adult bees, has not appeared in other apiaries, though the one infected has made no improvement, but the bees are dying off.

The Orange County Beekeepers' Club, at its meeting April 8, considered the best methods of buying cans and cases. Mr. George J. Brown, the newly-elected vice-president for California of the United Honey Producers, made a report of the lowest figures quoted him by eastern firms with whom he has been in correspondence, on carload lots of cans and cases.

This is one of the initial movements here for cooperation in the handling of a honey crop. If enough beekeepers join together to make buying in large lots practicable, there ought to be considerable saved in getting the crop cased ready for market. At this meeting also Mr. Brown will begin his campaign of boosting—commencing in his home club. When the proper literature is ready the subject is to be put before the Domestic Science teachers of the California Public Schools.

Orange, Calif.

Strong Colonies for the Harvest

BY OSCAR RITLAND.

THERE are several systems of managing bees in the spring, but if we are going to expect a good surplus they must all come to the same end, and that is, strong colonies for the harvest. This is especially true in producing comb honey, but it is also very important in extracted honey production.

A medium colony will do well when supplied with empty combs, whereas it it will do very little at comb honey. For this reason beekeepers who produce both comb and extracted honey usually divide their colonies into two classes at the eve of the harvest; one of those strong enough for comb honey and the other those not strong enough. These latter are then used for extracted honey. If you are a comb-honey producer don't be satisfied with having most colonies strong, thinking the rest can be used for extracted honey. For if the medium colonies were strong they could still be used for extracted honey, and the amount stored would of course be much more.

The noted beekeepers of today would not have been what they are had they not continually set the mark a little higher. It is the weak colonies that take down the average. Are you sure that you have done everything that you can to help all your colonies to become strong? Are they protected from the prevailing winds? Are there no cracks at the tops of the hives where the heat can escape? Is the entrance contracted? Are all supplied with abundance of stores? Are the combs straight and of worker size cells? Is the cover rain proof? If you cannot say yes to all the above questions, it is up to you to remedy the trouble. Then adopt whatever system you think is best for you, but don't divide your colonies before the harvest unless you prefer increase to surplus honey. Let every mistake be a lesson so as not to let the same thing happen again.

Elroy, Wis.

APIARY OF OSCAR RITLAND AT ELROY, WIS.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Sections Unsealed in Center of Super

I notice in your department in the American Bee Journal for August, 1913, an article entitled, "Ventilation of Sections." In the fourth paragraph you speak of several sections in the center of the super being only partly sealed. Now, in the American Bee Journal for Jan. 31, 1907, I asked Dr. Miller a question regarding the same trouble as you will see by the enclosed clipping.

The year previous to the one I asked Dr. Miller that question, we opened many supers to find all sections entirely finished excepting the center ones. I attributed the trouble to hot weather, as all the colonies were very populous. Can you throw any light on the cause or have you found a remedy?

A. C. GILBERT.

To find unsealed sections in the center of a super while the outside ones are finished is not a thing of frequent occurrence; or if so, it has not been reported. Dr. Miller is inclined to think that he never heard of a case of the kind until he got from you the letter to which he replied in January, 1907, page 95. In that reply he gives three guesses as to what might be the cause: 1, a difference in nectar; 2, objectionable sections; 3, brood in central sections. These were only guesses, as he knew nothing about the matter from experience.

But a very few years later we were surprised to have the same thing occur in our own apiary, and this was mentioned in his department (as you say) on page 262, August, 1913. It was there vaguely suggested that heat might be the cause, and there is very little doubt that you are correct when you say, "I attributed the trouble to hot weather."

As to the remedy. If heat is the cause, then the thing to do is to reduce the heat. That can be done in part by having the hives where there is a free circulation of air, and by keeping them shaded. If the hive be well ventilated at the bottom, there will be less heat at top. More effective is ventilation of the super itself. If shoved far enough forward, a space will be made at the back end so large that there is little danger of too much heat in the super. But, then, when a cool spell comes it will be too cool at the end where the opening is. Making the opening less and more, according to the weather, is a pretty big job. In any case, ventilating a super at the end doesn't seem to be where it is most needed. After studying long over the problem Dr. Miller devised a way that may help out.

In the latest edition of "Fifty Years Among the Bees," page 121, occurs this:

"If we could only have ventilation at the center, where sealing is first done, instead of at the ends where the last sealing is done! Well, why not at the center? In 1912 I tried it, making a ventilation cover. Here is the bill of material for it: 2 pieces 20x4⅝x¼; 2 pieces 4x4⅝x¼; 2 pieces 13⅞x½x½; 2 pieces 7x½x½. At each side will be one of the 20-inch pieces, and between them, one at each end, the 4-inch pieces. These will be nailed upon the 13⅞ pieces, one at each end, and the 7-inch pieces will come at the inside ends of the 4-inch pieces. We now have a cover with a central opening 12x4⅝ inches. This is laid upon the super with the ½-inch-square pieces uppermost, and on this is placed the usual cover. If desired, this ventilation cover can be lightly nailed to the hive-cover, to be removed at the close of the super season. These ventilating covers have not been thoroughly tested, but give promise of being an acquisition."

The foregoing is not as complicated as it sounds, and is worth trying.

Questions on Beekeeping

1. What is the difference between the leather-colored Italian and the nutmeg Italian?

2. I once hived a new swarm on the old stand and moved the old colony away. The next day the bees swarmed again. What was the reason? Does it often happen that way?

[Mrs.] Mary L. Hines.
Holly, Colo.

1. The leather-colored Italian is one which has three bands, not bright yellow, but more nearly approaching the color of what is called fair leather. There is no bee generally known as the nutmeg bee; but it is likely that some one has given that name to his bees, just as you would call a colony of bees the Smith bees, or the Iron City bees, if you had bought them from Mr. Smith, of Iron City.

2. Such a thing happens only too often, and generally because the place is uncomfortably warm for the bees. For the first week after a swarm is hived, it is a good plan to give abundant ventilation, either by raising the hive on blocks or shoving the cover forward so as to leave an opening above. Better than either one is to do both. It is well also, if the hive is not in a shady place to shade it in some way. One way is to put an armful of fresh-cut hay, or something of the kind, on the cover, anchoring it there with something like two or three sticks of stove-wood.

Lady Beekeeper Scores Highest Average in British Columbia

The honey crop reports for 1915 in the Province of British Columbia have been tabulated, and show an average of 23 pounds to the colony; not a bad record for what is asserted by our oldest beekeepers to be the poorest season in 30 years, this being the beekeeping life of our oldest, and, I believe, the best beekeeper in the Province. The highest average is 83 pounds from 14 colonies, and is reported by Miss Violet Ruddick.

Miss Ruddick was born and reared on the ranch. When the district inspector visited the ranch in 1911, he found about a dozen colonies in a rather derelict condition, and he induced Miss Ruddick, then about 20 years of age, to undertake the responsibility of them, giving her a very little instruction as a starter. For a year or two she made but little headway, but in 1914 she raised 919 pounds from 14 colonies. That was rather a good season, when almost everybody got a crop, so she deserves all the more credit when she increased the yield in a very poor season to 1169 pounds from the same number of colonies.

To show the effect of systematic instruction the following figures tell the story: Estimated crop of British Columbia in 1910, 20 tons; reported crop of 1913, 50 tons; crop of 1914, 150 tons; crop of 1915, 100 tons.

Victoria, B. C. F. Dundas Todd.

One cannot help wishing Mr. Todd had told us a little as to why this lady beekeeper should have out-distanced her competitors of the male persuasion.

Being reared on the ranch, it is possible the superior climate accounts for her superior achievements; but a suspicion arises that the instructor may not have been entirely impartial.

At any rate, we are thankful to Mr. Todd for telling us about it.

Sept. 20-1915

AN ILLINOIS APIARY

Cross-Building of Combs

I use full sheets of comb foundation in the brood-frames, yet the bees build across from one frame to another. After they have filled the sheets they are hard for me to get out of the hive. I use the super on top for comb honey.

Wedderburn, Oreg. Etta Moore.

If your frames are properly spaced the only way in which the trouble you mention could occur is by the weight of the bees upon the foundation breaking it away from the top-bar because not properly fastened. It would have been better if you had made an examination within a day after the bees were put upon the foundation.

The thing to do now is to cut away any comb fastened to the wrong frame, press it back into its proper place, and then fasten it there by means of strings.

In some cases you will need to use pieces of broken sections, or something of the kind, to make the center of the comb come in the center of the frame.

In three or four days the fastenings may be removed.

Divided Brood-Chamber

I am enclosing a leaf from a booklet which I have marked. I would like to know when rearing queens by that method, Article 4, what will prevent the bees from building queen-cells in the compartment from which the queen has been transferred?

A Woman Beginner.

The paragraph referred to reads as follows:

4. "A Divided Brood-Chamber.—For this purpose a hive of not less than ten-frame capacity should be used. The bottom-board should be nailed on. Make two tight-fitting zinc division-boards, bound with wood. Let these fit securely on the bottom-board, and come up even with the top of the hive. They must be made to fit so nicely that, when the hive is closed, no bee can find a passage above, below, or around the sides of them. Place them parallel in the middle of the brood-nest in such a manner that the same is divided into three compartments of equal dimensions—one on each side of them and one between. Each of these compartments will be capable of obtaining three frames. The central one is for two frames of unsealed brood and a frame of cells. Always put the cells in the center. The other two compartments are to be occupied by the queen, she being transferred from one to the other as occasion demands, thus keeping the combs well supplied with brood."

When the queen is transferred from one compartment to the other there is nothing to prevent cells from being started except disinclination on the part of the bees. There is free passage through the excluders from one compartment to another. In such cases cells will not usually be *started* although the bees will respect cells given them which are already started.

MISCELLANEOUS NEWS ITEMS

Isle-of-Wight Disease Still Rampant in England.—My bees are gone with "Isle-of-Wight" disease. I lost them all in 1914, but I had a good colony given me last March; it did not live very long. I finished it off just as it was, honey, brood, and cheese-box in a bonfire. In May I had two stray swarms come to me. The first, a very large swarm, was hived in a Royal Notts hive that had not had bees in for some years. It started well, and in 14 days I put a super of sections on, but the bees never occupied them, and soon showed signs of "Isle of-Wight" disease. The wasps finished them off. The other, a small colony, was put into a hive that was burnt out with a painter's lamp, and had everything new in the interior, but it never strengthened as it ought to have done (the weather was wet). When I went back to pack it up there was plenty of honey, a lot of brood, but only a few bees, so I expect it will go this winter.

There were four other swarms that came to the village, but they are all dead. Where all the bees come from I cannot make out, as we have heard of several other swarms going over, and there are scarcely any bees left in the neighborhood.—John R. Truss, Ufford, Stamford, England.—*British Bee Journal*, Jan. 20.

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Siberian Beekeeping. — Interesting statistics are translated for us from the Russian Beekeepers' Review, by Mr. P. Schaffhauser, of Havelock, N. C., concerning bees in the province of Sudzenskoye, Government of Tomsk, Western Siberia. There are in that province 1388 apiaries with 42,507 colonies of which 23,675 are movable-frame hives and 18,832 log-hives. The product in 1913 was 99,484 rubles ($51.234). Three different styles of modern hives are in use, the Dadant large hive, the Dalinov and the Root, with crop results very much in favor of the first mentioned.

The proportion of colonies to the population is only 25.4 per 100 inhabitants. Siberia, which most of us have been taught to consider a cold, inhospitable and unproductive country is reported to be able to sustain, in some places, more than ten times the number of colonies now existing there.

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Annual Meeting of the Colorado Honey Producers' Association. — The annual meeting of the Colorado Honey Producers' Association was held in Denver Dec. 27-28, 1915.

The demonstraions took place at the warerooms of the association. The most important demonstration was the grading and packing of comb honey, and also the way shipping cases should be nailed up and the edges planed off so that cars of honey can be easily and well loaded.

Samples of comb affected with American and European foulbrood were exhibited by the writer, and a short talk given on the European foulbrood situation. Mr. N. L. Henthorne made a motion that the members be cautioned against bringing in or shipping in bees or queens from localities outside of the State to prevent the spread of bee-diseases.

The motion was carried.

The outdoor wintering of bees was pretty thoroughly thrashed over, and the most of those present thought that, all things considered, wintering on the summer stands is the best for the arid regions. The sense of the meeting was that Dr. E. F. Phillips was too broad in some of his statements in the bulletin on the outdoor wintering of bees.

It was stated by several that chaff hives were very poor for wintering bees, some losing half to all of their colonies so housed.

Some admitted that better wintering might result from packing in outer cases, but the gain would not pay for the expense.

It was brought out by Mr. Herman Rauchfuss that we lose many of our strongest colonies by starvation each year as it is those colonies that store the most surplus honey and breed up the best in the fall that are short of honey in the winter. Mr. Rauchfuss practices placing upon these colonies his weak and queenless colonies that are heavy with honey.

Oliver Foster tried about every method known to beekeepers, and his least loss came when he quit giving protection and requeened his colonies with young queens of his own rearing in July and August. Two different years he wintered an apiary of Caucasians of more than 100 colonies on the summer stands in 8 frame, single-walled hives and flat wood covers without the loss of a single colony. This was at a time when he was operating over 400 colonies, with hired help. These bees were not pampered or given any special attention.

The usefulness of the association to its members was brought out by Mr. Frank Rauchfuss, the manager. He told of the facilities for combining in the purchase of apples, pears, produce, etc. Many members were not availing themselves of the opportunity to secure many articles at wholesale through the association. The association's help in the sale of bees, securing beekeeping labor, transfer of stock and beekeeping exchanges, was discussed, and the feasibility of issuing a monthly sale and exchange list.

The evening of Dec. 27, the association served a supper to the members present, 31 being in attendance. After the supper, the question of honey production in outyards was taken up, and the writer was asked by the president, Mr. George Miller, to begin the discussion. The importance of some plan or system was emphasized. It is impossible to follow in detail one's plans for the reason that no two seasons are alike, but if one can come close to working one outapiary a day, then five or six outyards may be worked each week, with an extra day or two to go on if one gets behind or bad weather intervenes.

Mr. M. W. Harvey, formerly of Montrose, Colo., now of Nevada, follows the plan of having a honey-house at each outyard and storing all supers, sections, etc , at each yard. The plan followed by most beekeepers entails the hauling of supers to the outyards and back each year, as the honey is packed and stored at the home honey house.

On account of the frequency of beekeepers having to move their bees, not very many use honey-houses at the outyards.

Mr. Herman Rauchfuss pointed out that no plan one could make in advance will work in practice. Weather conditions are too disturbing.

The morning session, Tuesday, Dec. 28, was the business session. The president, George Miller, read his address, pointing out the main features of the year's business.

Mr. Frank Rauchfuss gave the secretary and treasurer's report, which imparted the information that the financial affairs of the association were in a very satisfactory condition.

It was gratifying to learn that the commission required to sell the members' honey was but about 1¼ percent, 3¾ percent being rebated back to the members.

The election of a board of directors resulted as follows: President, George Miller; vice-president, Fred Wick; secretary and manager, Frank Rauchfuss; treasurer, Harry Crawford; directors, Herman Rauchfuss, A. Elliott, Fred Stone.

The afternoon session was probably the most important. A committee was appointed to secure legislation on the matter of stealing honey and molesting apiaries. This Legislative and Protective Committee consists of Herman Rauchfuss, Wesley Foster, B. F. Hastings. A fund of $18 was contributed by members, and this is just a starter, as the committee plans assessing all members who comply with the provisions up to 5 cents a colony to create a fund sufficient to prosecute cases of tampering with bees and stealing honey.

The members voted to accept the invitation of Mr. and Mrs. Wm. Lindenmeier, Jr., of Fort Collins, to hold the next summer field meeting at their park—Lindenmeier Lake. This is a beautiful spot on the edge of Fort Collins, and is reached by good roads from all points in northern Colorado.

Boulder, Colo. Wesley Foster.

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Queen-Rearing at Wisconsin Agricultural College.—A very interesting paper read at the Wisconsin meeting last winter was the report on the rearing of queens at the college, which was in charge of Mr. C. W. Aeppler.

The proposition of furnishing queens to beekeepers for 50 cents each was tried for the first time last season. There were handicaps which kept the venture from being the great success it might have been. Two of these were lack of funds and supplies to work with, and bad weather conditions during the mating season. In spite of these, however, quite a number of beekeepers were furnished with queens. It is interesting to note that all bee-keepers getting such queens were unanimous in their praise. The fact that there was no limit placed on the number of queens to each beekeeper prevented a wider distribution.

This year it is proposed to get more nearly equipped, and to furnish not less than 500 queens to the beekeepers of the State, with a limit of six to each individual.

Wisconsin and Minnesota are the first two States to undertake the rearing of queens in this manner. The benefits to be derived from selection of stock and requeening from well and carefully bred colonies is not to be estimated lightly.

◆

Foulbrood Insurance in Switzerland.—We are in receipt of the annual report of the Union of Swiss Beekeepers for Foulbrood Insurance. As previously stated in these columns, the membership of this association is 9224, with a total number of colonies of 118,810.

In 1915, 47 apiaries were found infected, and the total number of colonies with the disease was 113. Of these 38 were brushed to new combs while the other 75 were totally destroyed and the combs either burned or melted up and the interior of the hives scorched.

HOW THE INSURANCE WORKS.

The report does not show whether there was a different rate of payment when a colony was shaken and when it was destroyed. The total amount of insurance paid, however, was about $320, or an average of $2.50 for each diseased colony. The premium paid by members was one cent a colony or a total for the year of $1189, leaving a balance for the year of $791 after paying all expenses. This added to their previous balance makes a total available in the treasury of the association of $2257.

The aim of the association is to reduce the insurance rates each year and still keep ahead of losses from foulbrood.

Under the leadership of Prof. Leunenberger, this association is getting good results. There are still a number of beekeepers outside the association, but its advantages are so evident that the number of members is increasing rapidly. The percentage of disease is also becoming markedly smaller.

The question now is to apply the principle on which this association is run to conditions in this country. Reference to the foulbrood reports of the different States shows that the percentage of disease is much greater than in that country. However, it would not be necessary to pay quite such a high damage for each colony, and we feel sure that it would be possible to get a large membership at a higher premium rate, say 3 to 5 cents a colony.

Naturally such an organization should be carried out in cooperation with the State inspectors. It ought not to be extremely hard to get a nucleus of beekeepers to try such a plan. As percentages, etc., were worked out the membership could be increased until it became national in character.

◆

The Washington Meeting.—The 22d annual convention of the Washington State Beekeepers' Association was held at North Yakima, Wash., on Feb. 9 and 10. The weather conditions were unusually bad, and the attendance was not as large as expected; but those who braved the elements were well repaid, for the program was an excellent one.

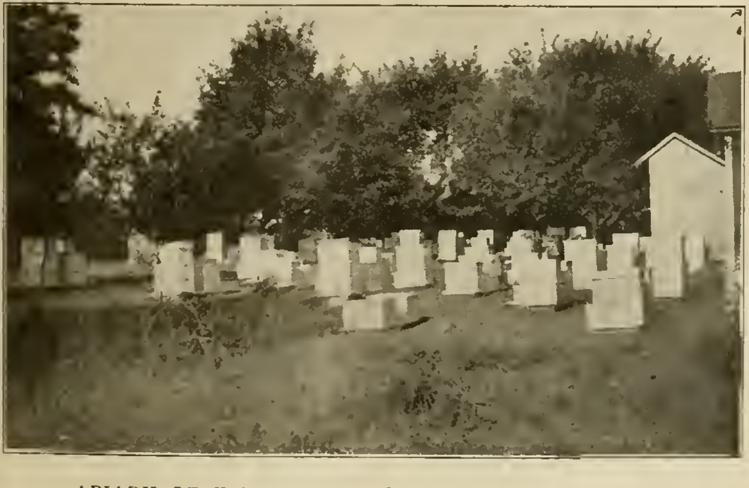
There were papers and addresses by some of the best known beekeepers of the State on subjects of interest to beekeepers, one by Mr. Sauter, of College Place, on queen-rearing being particularly interesting. Mr. Sauter is the only large commercial queen-breeder in the State.

There was a paper by Prof. Wilson, Entomologist of the University of Wisconsin, on "Better Queens, Better Bees; Better Bees, Less Disease."

Prof. Thornber, of the Washington State College, told of the college extension work.

On the evening of the 9th, Prof. Melander, Entomologist of the State College, gave an illustrated lecture on "Ants, Bees and Wasps," which was a revelation to many of those present.

Anson S. White, the only surviving one of the charter members of the association, read an interesting paper on the original membership and the early days.



APIARY OF F. KITTINGER, OF FRANKSVILLE, WIS.

The members were so well pleased in buying containers in carload lots in 1915, that they decided to order the same way this year, and may add some other articles to the list.

During the year four members have passed away, viz.: L. R. Freeman, a charter member and the first secretary of the association, D. B. Greenwalt, at one time president, J. D. McIntosh and Mrs. Pressy, all well and favorably known.

Ten new members were added during the year.

A committee was appointed to draft a foulbrood law, and also one to arrange for purchase of containers for the coming season's product.

The officers elected for the ensuing year were: President, J. B. Ramage, of North Yakima; vice-presidents, C. W. Higgins, of Wapato, E. Sauter, of College Place, W. H. Tucker, of Prosser, J. J. Peters, of Arlington; secretary, H. T. Skinner, of North Yakima; treasurer, Gus. Sipp, of Selah.

H. T. SKINNER, *Sec.*

◆

Western Washington Meeting.—The first meeting of the Western Washington beekeepers was held at Chehalis Jan. 21 and 22. There were bee-men from all parts of the State present. The following program, which proved very interesting, was rendered:

Address of Welcome—Judge A. E. Rice, of Chehalis.

Up-to-Date Apiary—W. L. Cox, of Porter.

Value of Bees in Fruit Growing—W. E. Rambo, Chehalis.

Paper, Securing State Aid—C. P. Dadant, Hamilton, Ill.

Producing Extracted Honey—N. P. Nelson, Centralia.

Short Cuts in American Foulbrood—J. B. Espy, Chehalis.

Experience with Apis Dorsata in India, the Biggest Honeybee in the World—W. E. Rambo, Chehalis.

Bee Diseases, Particularly *Nosema Apis*—Prof. Trevor Kinkaid, University of Washington, Seattle.

Interesting discussions followed each speaker.

An organization to be known as the Western Washington Beekeepers' Association was launched. J. B. Espy, of Chehalis, was elected president, and W. L. Cox, of Porter, secretary-treasurer. Messrs. Espy, Kinkaid and Cox were chosen as a Legislative Committee; the Legislative Committee is to meet with the State Association and a joint committee to draft necessary bee laws.

There was also a strong resolution by State Senator J. E. Leonard, adopted to be presented to the legislature.

The Colorado grading rules were adopted. The meeting was a very enthusiastic one, and we expect good results to follow.

W. L. COX, *Sec.*

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The Farm Manual Series.—Through the courtesy of the Lippincott Company of Philadelphia, we are in receipt of the last farm manual series. The names of these are: "Productive Swine Husbandry," "Productive Feeding of Farm Animals," "Productive Farm Crops," "Productive Horse Husbandry," and "Common Diseases of Farm Animals." The complete series make a fine addition to any library. Prices of any of these books is $1.50, and they may be obtained direct from the publishers or from this office if desired.

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Shakespeare Quotation.—In our number for June, 1913, we gave seven quotations of Shakespeare, mentioning "hives," and thought we had given them all. But here comes the British Bee Journal with another:

> "He is not worthy of the honeycomb
> That shuns the hive because the bees have stings."

Can any of our Shakespeare students tell where this is to be found?

◆

Massachusetts Society of Beekeepers.—The 5th of the six regular meetings of the year 1915-16 was held in the Williams Room in the Ford Building, Boston, Mass., Saturday evening, March 18.

Miss Dorothy Q. Wright, of Lowell, Mass., (one of our own members) was the speaker. Being a practical beekeeper, she was very interesting and held the attention of the large gathering for about two hours. She had a display at an exhibition in Lowell recently. There were miniature hives in an apple orchard, dolls with hoods of net tending them. The trees were made of bayberry shrubs with the berries painted red. Above was a sign, "An Apiary," and a large number of visitors stepped up to ask her what sort of animal an apiary was. She believes that all beekeepers should rear their own queens, as queens by mail are more or less injured.

Arthur C. Miller, of Providence, R. I., was also present.

HENRY W. BRITTON.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Starting to Keep Bees

I am anxious to try to keep a few bees. It is a calling that always appealed to me, but always having lived in such cities as London, Paris and New York, where there was no space at my disposal, I never tried it. But I consider that I have an ideal spot here in Wisconsin. I would like to start with two hives, and gain knowledge by looking carefully after these. Could I buy the hives, frames, bees, etc., from a dealer already with instructions how to set them up?

In reading the Bee Journal I see that a great deal of mention is made of queens. Is it necessary to change the queen yearly or oftener? I would like a few hints that might help a beginner, and will write to let you know later what has been my luck or otherwise. MENASHA.

ANSWER.—The first thing I would advise is that you get a good book of instruction on beekeeping, such as Dadant's-Langstroth, if you do not already have such a book.

You will have no difficulty in buying all the things you need, but I am not sure that dealers send out printed instructions for putting together hives, etc. Generally, however, those who buy supplies in the flat have on hand hives, etc., that are already put together, and by looking at these they have no trouble in understanding what is to be done. It might be advisable for you to have at least one hive that is put together.

Some beekeepers have a practice of changing their queens when a year or two years old, but probably the larger part do not. In my own practice I never replace a queen merely because she is old, leaving it to the bees to supersede her themselves. So my queens are left to die a natural death, unless I find one that is not a good queen and then her head comes off as soon as I can replace her with a better.

The hints that you want you will get from the bee-book, better than I can give you by filling many pages. You will, however, find things that are not fully clear to you in the book, and then this department is at your fullest service to help you out. By all means let us hear of your experience.

Starting a Colony—Introducing a Queen

1. Can I make a new colony of bees with 2 frames of bees and a queen, and how early in spring?

2. How long will I have to leave them shut up with the queen before they get acquainted in the hive? SUBSCRIBER.

ANSWERS.—1. Yes, 2 frames well filled with brood and well covered with bees ought to make a good colony before winter. If you mean how early it will be wise to begin, all things considered, it will not be wise to begin until colonies are so strong that they can spare the 2 frames of brood and still be strong, and that will likely be not such a great while before swarming time. If you mean how early it will be necessary to begin so that there shall still be time for building up, that depends upon the strength of the nucleus with which to begin, and also upon the pasturage and the season. If the 2 frames are hardly half filled with brood, with scarcely enough bees to cover it, in a place where there is no late flow and the season poor, there might be some difficulty about the colony being strong enough for winter, no matter how early the beginning is made. If the frames are well filled with brood abundantly covered with bees, in a place where there is rich pasturage continuing until late in the fall, there might be no need to begin until some time in August, or possibly even the first of September.

2. I suppose you mean how long the bees must be fastened in the hive so they will not return to the hive from which they were taken. If two frames of bees and brood are taken from a colony, and put in an empty hive in the same apiary, many or all of the bees will desert if no precaution is taken. If they are fastened in the hive for three or four days there should be no trouble, and not many bees will return if they are imprisoned two days. There will be less need for fastening the bees in the hive if a double portion of bees be given. The old bees may then return and still leave a good force of the younger bees. If the bees are taken from a queenless colony, they will stay better tha if taken from a queenright colony. [If the weather is hot keep them in the cellar during the confinement to the hive.—C. P. D.]

Transferring—Hiving Swarms

1. My bees are in 8-frame hives and I wish to put them in 10-frame hives. When shall I make the change, and where shall I put the two frames of foundation on the sides or between the combs?

2. Will you explain the working for bulk comb honey.

3. In hiving a swarm should I hive them on the old stand in a new hive or give them a new location?

4. In hiving a swarm on the old stand, having no flow on at the time, should I use starters or full sheets of foundation?

5. What size of foundation would you recommend to use in shallow frames 3⅜ inches deep of bulk comb honey?

6. Will light brood foundation do as well as medium when wired?

7. In buying bees in pound packages how many frames of foundation should be given them at the time? OHIO.

ANSWERS.—1. You can do it any time when it is warm enough so bees fly freely. Put the frames of foundation at one side.

2. Cut the combs of sealed honey out of the frames, divide it into pieces small enough to go into the container, and after filling the container with these combs pou in all the extracted honey you can.

3. If you don't want the colony to swarm again, hive the swarm on the old stand; if you want an afterswarm, hive the swarm on a new stand.

4. Better use full sheets at all times unless you want a good deal of drone-comb.

5. Thin super.

6. Yes, if it has a little closer wiring.

7. You may give just what the bees will cover, or you may give any number more up to the full capacity of the hive.

Comb or Extracted Honey?—Mixing of Races of Bees

1. Would you advise a beginner to start in with extracted or comb honey?

2. Will a queen mate in the air with a drone from other colonies? If they do it would it be hard to keep pure-bred bees? Mine are getting black; they mixed with my neighbor's bees, as one of them kept black bees. MICHIGAN.

ANSWERS.—1. That's a difficult question, the matter depending so much on your market, your bee-forage, and other things, so that no one can decide the question so well as yourself. For a beginner it is easier to run for extracted, and you get more of it, probably a half more, and some good authorities say even double. If you have light-colored honey, and can sell sections for twice as much as extracted, or even possibly a half more, then comb honey may be the thing for you; if you are in a location where extracted will sell for nearly as much as comb, then by all means extract.

2. You thought exactly right; they do mix at a distance of two miles, more or less, and it's not an easy thing to prevent such mixing.

Hiving a Swarm

Last August a swarm of bees took possession of the piazza, going through a knot-hole under the clapboards. Would it be possible to get them into a hive? NEW JERSEY.

ANSWER.—Leave them until the fruit trees are in bloom. Then cut away one or more of the boards so as to expose the bees and combs, using enough smoke to keep the bees subdued. Set a hive close by, cut out the combs, fastening at least some of them in the frames and put them in the hive, brush and smoke the bees out of captivity, close up the boards and the knot-hole, keeping up such a dense smoke that all the bees will be kept out The bees may fly about the place for a time, but will finally conclude to make the best of it and settle in the hive, and may then be taken away.

Entrances Too Small

I had three swarms in factory-made hives, and the rest are in old boxes. I lost two of those in the good hives, and the third one lost half of its bees. What would cause it? Could the hives have been too tight? I found dead bees piled inside the entrances. The opening was ¼x1 inch on the one that was partly dead, and I opened it to ⅜x12 inch, and they have cleaned the dead bees out and seem to be all right now. The rest of my bees in the old boxes are doing fine. What was the trouble? Iowa.

Answer.—A bee can barely crawl through a space one-sixteenth of an inch deep. You left them a space of ¼ inch through which they could readily pass, yet so shallow that it was easily clogged with dead bees, and then the bees could not get out at all. It was pretty warm, the excitement of the bees made it warmer, and the bees smothered.

Temperature for Opening Hives in Spring

1. What should the temperature be to open a hive safely in spring?

2. How much space should be left between the tops of the brood-frames and the cover of a hive? Subscriber.

Answers.—1. If you go by the thermometer, perhaps it may be said that it should not be less than 70 degrees. But something depends upon what you are doing, and also the weather. If you merely glance into a hive to see whether stores are lacking, or even take out a frame to see whether there is any brood in the hive, there will be no great risk at 50, provided it is still and the sun is shining. But if there is a fierce raw wind, there may be danger at anything less than 70. A pretty safe way is to let the bees decide the question for you; do not open the hive at a time when bees are not flying freely.

2. About a quarter of an inch.

Wintering—Best Hive for Comb Honey

1. Which do you consider the best, cellar or outdoor wintering?

2. Which is the best hive for comb honey the dovetailed or Danzenbaker? Michigan.

Answers.—1. South of somewhere about 40 degrees north latitude it is better to winter outdoors. North of that cellaring is generally considered better, although some winter successfully outdoors as far north as in Canada

2. I think the great majority prefer the dovetailed.

Starting a Colony—Rearing Queens

1. Is it better to start a new colony with nuclei or bees by the pound, and when should they be placed in the hive?

2. Can you start a colony by putting a lone queen in the hive?

3. When a small colony is placed in a hive with a queen is it likely to swarm out and go away?

4. When a colony sends off a swarm, will they rear and provide a queen for this same colony that swarms off?

5. Will a full colony rear more than one queen for a new colony; if so, can you save these?

6. Can you rear queen-cells, or what are some of the best methods for queen-rearing? Missouri

Answers.—1. That depends. If you have plenty of strong colonies and are not anxious for very rapid increase, then it will probably be better not to send away, but if you have very few bees and are anxious to increase rapidly, it will be advantageous to get bees by the pound. In either case it is hardly well to begin before honey is yielding pretty freely.

2. No.

3. No; but it may sometimes happen.

4. No normal swarm ever issues unless there is already present a queen to go with the swarm.

5. When a colony swarms there are always a number of queen-cells in the hive, and you can save the surplus ones

6. Yes, you can make queen-cells, at least the queen-cell cups, and can get the bees to use them. To go into a discussion of methods of queen-rearing would be going beyond the scope of this department. You will find that in the books, and there is a whole book devoted to queen-rearing by that master in queen-rearing, G. M. Doolittle.

Laying-Workers

In queenless colonies that have fertile workers, how would it be to brush the bees all off the combs into the hive, then carry the hive and bees off, say 100 feet, dump the bees out, then put the hive on the old stand. In that way I think the layers could not fly back to the hive. If this would not be satisfactory would it be wise to unite them to a weaker colony? Pennsylvania.

Answer.—Taking laying workers a distance from the hive, hoping they would never return, has been advised sometimes, but I am afraid you wouldn't find it satisfactory. You will probably find that a large proportion of the bees are at the foolish business of laying eggs, and that they will find their way back as well as other workers. Uniting with a weaker colony is good. One way is to lay a newspaper over the colony of laying workers, and then set the weak colony on top.

Non-Swarming Plan

1. I have no drawn comb, and run for section honey only. Could I work this plan by placing a hive-body on top of the swarm and raise a well filled frame of brood up to the hive-body, then fill that with frames of full sheets of foundation, and as the brood hatches drop that and raise another so as to keep brood always above?

2. When the honey flow begins and I place the sections on will the bees work in the sections as well as otherwise? Pennsylvania.

Answers.—1. I don't see any reason why frames filled with foundation should not work as well as drawn combs, and the plan you propose seems to fulfill the conditions, which are to have unhatched brood constantly in the top super and space below in the hive proper.

2. No, so long as there are drawn combs above, the bees will show at least a little preference for them.

If you try the plan please be sure to report how it works for you.

Weak Swarms

1. Last spring I bought four colonies of bees, three of them swarmed. The one that didn't swarm made 125 pounds of comb honey. Can you tell why it didn't swarm?

2. I hived a little third swarm of bees. The swarm did fine for about a week, and then I found there wasn't more than 200 bees left in the hive. Can you tell where the bees went? The swarm had brood, but it was unsealed. A few weeks after I took two frames of brood and honey from another colony and gave them this swarm. The brood hatched out, but the bees died off. Was the colony queenless?

3. Can I use this hive for another swarm next year? Quite a few cells have dead bees, and a few have sealed brood that did not hatch.

4. I am planning on cutting out drone-cells this spring. How does a person fasten the foundation in, especially if there is a little piece of drone-comb in the middle of the frame surrounded by worker-comb?

5. If I cut out drone-cells will the bees rear drones in the supers unless I use excluders? Do excluders hinder the bees?

6. I had a small swarm that came out late, and I gave it three frames of sealed honey. Will that swarm amount to anything in the spring and will it likely swarm out?

7. I read that bees that are in hives in the fall live until spring What causes lots of them to die off during the winter?

8. I noticed quite a few dead bees over back of the hives and near the door, how do they get over there? My cellar is perfectly dark.

9. Before I put a super on a colony that didn't swarm, the hive was full of honey, but when I took off the honey in the fall there wasn't five pounds of honey left in the hive. Can you tell where the honey went? Minnesota.

Answers.—1. When a colony good enough to store 125 pounds of honey does not swarm while other colonies do, the likelihood is that it is simply because the strain is so good that the bees bend all their energies to storing without wasting time swarming; in other words, the bees don't swarm because they are too good to swarm. That may not be very much of an answer, but it fits the case as well as any other answer I happen to have on hand at present.

2. I don't know. The queen may have been at fault, but the fact that brood was in the hive looks a little as if the bees may have been starved into swarming out, and so there would be a hunger swarm. The bees were not queenless in the first place, for they had brood within a week after being hived.

3. It will be all right to use the hive for a swarm again, in spite of the dead bees and brood, provided there was no disease in the hive.

4. After cutting out the drone-comb, cut away the cells on one side down to the septum or middle wall, to the extent of quarter of an inch or more all around the hole. In a warm place, with the foundation so warm that it is pretty soft, press down the edge of the foundation upon the bared septum and the bees will do the rest.

5. Yes, unless the super is filled with worker foundation so the bees have no chance to build drone comb in it. Excluders do not hinder the bees much.

6. It is likely that it will be dead in the spring or before that, yet possible that it may live through, make a good colony and send out a swarm.

7. The bees in the hive in the fall don't by any means all live until spring. The older ones die of old age all through the winter.

8. Bees about to die come out of the hive and crawl away, so you may find dead bees on any part of the cellar bottom.

9. During the summer the honey was taken out of the cells (eaten or moved into the super) to make room for the brood, the combs being well filled with brood. Then when brood-rearing ceased there wasn't enough honey gathered to fill up the combs again.

Two Swarms No Queen—Where Return

When two swarms issue and unite, and both queens are taken away, why will not these bees separate and return to their respective original hives? Cuba.

Answer.—I don't know, but I can make something of a guess. When a lot of bees issue as a swarm, they have made up their minds they don't want to stay in the old home any longer. If their queen was taken away, or, being clipped, fails to go with the swarm, the bees may return to the old home, but in a more or less sulky humor. If there is extra excitement at some other hive, they are very likely to go to that hive, thinking it a good place for a lot of bees to go that want to get away from their old home. Please understand that these bees which were formerly so attached to their home that they would have willingly sacrificed their lives in its defense have undergone an entire change of heart. Instead of pining for home, they would as soon, or rather, go somewhere else. So if A and B swarm at the same time and cluster together and then find there is no queen with them· the bees of A may make a start to return to their own home, and the call at the entrance is due to notice to the bees of B that there's a place where they will be kindly received, and they go there in preference to going to their own home. Suppose, however, that a quarter of an hour before A and B swarmed C had swarmed and were returning to their own hive at the time A and B issued. It is quite likely that A and B, hearing the call at the entrance of C would go there in preference to going to A.

Whether my interpretation of the feelings of the bees be correct or not, you may rely upon it that the actions of the bees are as stated, for I have observed it many and many a time.

Weak Colony—Best States for Honey Yielding

1. In examining my bees this spring I found one of them had perished during the winter, although they had plenty of honey and ventilation throughout the winter.

2. What State in the Union is the best honey yielder? PENNSYLVANIA.

ANSWERS.—1. Likely the colony was weak, and was caught clustered away from the main stores in a cold spell so long that all the stores within reach were consumed and then the colony starved with plenty of stores in the hive but out of reach.

2. Rather hard to say. California and Texas claim preeminence.

Putting Starters in Super—Mixing of Bees

1. Last season I put a super on a late colony of bees, but they did not make honey in it. During the winter they removed all the starters from the section. Must I refill them this spring?

2. I have a hive of pure Italians in an apiary with black bees. Will the swarms which come from it be pure Italians? SUBSCRIBER.

ANSWERS.—1. It will be necessary for you to refill the sections from which the bees have torn the starters. These supers should have been taken off just as soon as the honey flow was over last summer or fall.

2. When the swarm issues it is likely that the old queen will go with it, and therefore the swarm will be headed by an Italian queen and will be also pure Italian. The parent colony will rear a new queen which is pretty apt to be a cross between Italian and blacks.

Late Swarms

1. I had three swarms last season that came after Aug. 8. Knowing that it was too late for them to make enough to winter on, I put each one in hive-bodies that had been extracted and partly filled again. Apparently the swarms went through the winter all right; but a few days ago I discovered one of them was not flying out much, and on examining found but a small handful of bees. They had 20 or 25 pounds of nice honey and no eggs nor young bees, but I found some dead brood, there was no odor about the combs; they had no queen. What do you think was the matter? Do you think it was foulbrood?

2. If it was not foulbrood would it do to save the combs and honey and give them to other swarms?

3. How can you tell when there is foulbrood?

4. I have three other hive-bodies on top with nice combs with honey in. Would it be advisable to save them and give them to other swarms when they came? TEXAS.

ANSWERS.—1. You say there was no queen. That is enough to account for the whole trouble. There was some dead brood that was near to emerging, and that may have been there a long time, probably outside the brood-nest, where it had chilled to death. From what you say there was no indication of foulbrood.

2. Yes.

3. In American foulbrood you are likely to find here and there a hole in the center of the capping over a brood-cell; and if you stick a tooth-pick into the dead larva it will string out as you withdraw the pick; and there is also a very foul odor. In European you will find larvæ not yet large enough to be sealed that have quite a yellowish color.

4. Yes, if there is no disease present.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

FINEST Italian Queens. Send for booklet. Jay Smith, 1159 DeWolfe St., Vincennes, Ind.

PHELPS' Golden Italian Queens will please you.

MORE BEES than I have room for. Will sell 50 colonies. E. L. McDowell, McGregor, Ia.

TWENTY-FIVE colonies of bees for sale.
G. W. Lindle, Muscatine, Iowa

FOR SALE cheap 45 colonies of bees, extractor and other supplies. Write,
Mary Vernon, Carlyle, Ill.

FINE three-banded Italian queens. Circular and price list free. J. L. Leath,
Corinth, Miss.

TELL several thousand people what you have for sale with a few words in this department.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 70 Cortland St., New York City.

NORTHERN BRED ITALIANS, "Nutmeg" strain. Circular. A. W. Yates,
3 Chapman St., Hartford, Conn.

PHELPS' Golden Italian Bees are hustlers

QUEENS FROM THE PENN CO. See our large ad. elsewhere in this Journal.

ITALIAN QUEENS that produce hustlers. Nuclei and pound packages.
A. E. Crandall & Son, Berlin, Conn.

ITALIAN BEES for sale in 8-frame hives. $5.00 per colony. Satisfaction guaranteed. L. Boomhomer, Freehold, Greene Co., N. Y.

DOOLITTLE & CLARK'S Italian breeding queens will be ready for delivery May 1. Prices, $10, $5 00, and $2.50. Marietta, N. Y.

READY now 1-lb. 3-band Italian bees with queen, $1.65. 2-fr. nuclei with queen, $2.25. Rosedale Apiaries. J. B. Marshall,
Big Bend, La.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

FINE ITALIAN queens by return mail Island bred. Tested, 6 for $6.00; 12 for $11 Untested, 6 for $5.00; 12 for $9 00.
E. I. Blaine, St. Petersburg, Fla.

VIGOROUS prolific queens, $1 00; 6 $5.00; June 1. My circular gives best methods of introducing. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

IF YOU wish to get early queens and combless packages place your orders early with the Marchant Bros., Union Springs, Ala. See our ad elsewhere in this Journal.

INDIANOLA APIARY offers bees and queens for sale. Untested, 75c. Tested, $1.25. Bees in 1-lb. packages, $1.00; 1-frame nucleus, $1.25. Add price of queen if wanted.
J. Warren Sherman, Valdosta, Ga.

QUEENS OF QUALITY—The genuine "quality" kind of dark Italians bred for business. Guaranteed to please or your money back. Circular free. J. I. Banks,
Dowelltown, Tenn.

FOR SALE—Bright Italian queens at 75 cts. each; $7.50 per dozen or $60 per 100. Ready April 15. Safe arrival and satisfaction guaranteed. W. W Talley,
Rt. 4, Greenville, Ala.

FOR SALE—Bright Italian queens this season, 75c each; $8 00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

THREE-BANDED ITALIANS ready May and June, $1.00 each; 6 for $5.00; 12 for $9.00; after June, 75c each; 6 for $4.25; 12 for $8.00. For larger lots write Curd Walker, Jellico, Tenn.

QUEENS from my honey-gathering strains will be ready to ship April 1st. In honey-getting qualities they have few equals. See my advertisement elsewhere in this Journal. D. E. Brothers, Attalla, Ala.

GOLDEN ITALIAN QUEENS Select tested, $1.25. Tested, $1.00. Untested, 70c; 12, $8.00. Select untested, 80c; 12, $9.00. Untested, July, 10c off each; $1.00 per doz. off. No foulbrood. D. T. Goster, Rt. 2, Randleman, N. C.

FOR SALE—Forty or 50 colonies of bees with good straight combs built mostly from full sheets of foundation. Bees are nearly all Italian with some hybrids. Write me at once. B. A. Manley, Milo, Iowa.

QUIRIN'S superior northern-bred Italian bees and queens are hardy, and will please you. More than 20 years a breeder. Orders booked now. Free circular. Honeydew for bee food, 5c a lb. H. G. Quirin, Bellevue, O.

FOR SALE—In order to make room for early cells we are offering select tested queens for $1.00 each if taken by April 15th. These are young queens and were reared late last fall. M. C. Berry & Co., Hayneville, Ala.

A LIMITED number of new colonies three-banded Italians in nearly new eight-frame hives, $6.50 each. This includes one super. Strawberry bed, postpaid, $1.00.
Cherry Grove Fruit Farm, Dows, Iowa.

ITALIAN QUEENS, prompt service; queens mailed to purchaser in new style of introducing cage that is safe and sure. Bees from a one-frame nucleus to a carload. Write for price list on colonies, queens and nuclei. J. F. Diemer, Rt 3, Liberty, Mo.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

GRAY CAUCASIANS—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. H. W. Fulmer,
Box 10, Andalusia, Pa.

Queens, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons, Boyd, Ky.

Let us send you price list and descriptive circular of our bees and queens, and if you will tell us what sized and how many packages you may want, we will be glad to write you what the express will amount to.
R. V. & M. C. Stearns, Brady, Tex.

An established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

Carniolan, golden, and 3-banded Italian queens. Tested, $1.00. Untested, 75c; 6, $4.20; 12, $7.80. ½-lb. bees, 75c; 1-lb. $1.25. Nuclei, per frame, $1.25. No disease; everything guaranteed. Write for prite list.
C. B. Bankston, Buffalo, Leon Co., Tex.

For Sale—Good Italian queens, untested, 75c; tested, $1.00; nuclei, 2-frame, $3.00; 1-lb. package, $2.00; 2-lb. package, $3.00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1904 Park Ave., Little Rock, Ark.

Having secured breeders of Dr. Miller we are offering daughters of his famous strain of Italians at the low price of $1.50. each. Queens of our own strain at 75c each. One pound bees, $1.50; 2-frame nuclei, $2.25 Full colony in 8-frame hive at $6.50; 10-frame, $7.50; 200 colonies for spring delivery at $6.00 each, 10-fr. hives. The Stover Apiaries,
Mayhew, Miss.

A Daughter of one of Dr. Miller's best honey queens and the Beekeepers' Review for 1916 for only $2.00. A daughter of one of the best honey getting queens selected from 1100 colonies worked for extracted honey, from the yards of E. D. Townsend & Sons, and the Review for 1916 for only $1.75. The queens will be mailed in June direct from our breeders in the South. A rare buy.

Bees and Queens—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey gatherers. We breed this stock only. Untested queens 75c each; $8.00 per dozen; $60 per hundred. Tested queens, $1.25 each; $12 per dozen; $85 per hundred. Three frame nuclei, $2.25 each; $200 per hundred. Bees ½-lb. pkgs., 75c each; $60 per hundred; 1 lb. pkgs., $1.00 each, $85 per hundred. Add price of queens to above pkgs. Complete catalog free on application Spencer Apiaries Co.,
Nordhoff, Calif.

For Sale—36 colonies of bees in 8-frame hives; 50 supers full of frames and drawn comb; 30 brood-frames full of honey; 20 comb-honey supers and a lot of bait combs; 30 queen-excluding honey-boards; 10 Porter bee-escapes; 8 drone-traps; 100 new Hoffman frames not nailed; 100 or more other frames; 1 Cowan honey-extractor; 1 Doolittle wax-extractor; all of last year's wax and cappings Must all go in a lump. Sale here on the farm, 3½ miles from Livermore. At $200. S. C. Boyle, Bode, Iowa.

Carniolan, Golden and Three-Banded Italian queens from April to October. Tested, $1.00 each; 6, $5 40; 12, $10.20. Select tested $1.25 each; 12, $13.80. Untested, 75c each; 6, $4.20; 12, $7.80. Select untested, 85c each; 6, $4.80; 12, $9.00. Breeders, $3.00 to $5.00. Virgins, 50c each; 6, $2.50; 12, $4 00. Bees, 1-lb., $1.25; 2 lbs. $2.25; ½ lb., 75c. Nuclei, 1 frame, $1.25; 2 frames, $2.25; 3 fr., $3.00. Full colonies with tested queens, 8 fr., $6.50; 10 frame, $7.00. No disease, safe delivery and satisfaction guaranteed. Money must accompany the order. Write for price list.
I. N. Bankston, Buffalo, Tex.

For Sale—35 colonies pure Italian bees with select tested queens of J. P. Moore strain, $4.50 per colony; 35 colonies with mismated queens from same strain, $4.00 per col.; 35 cols. light colored hybrids from the same strain with queens, $3.50 per col., all in 8-frame bodies in good winter cases, mostly the Quinby standard, full depth self-spacing Hoffman frames, 8 to each hive, all combs straight, and all strong and healthy with plenty of honey, f. o. b. here.
Wilmer Clarke, Box 200, Earlville, Mad. Co. N. Y.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

Golden Italian Queens by June 1st. Untested, 75c or $4 00 per half doz.; $8.00 doz. Select untested, $1.00. Tested, $1.25 each or $7.00 per half doz.; $12 a doz. Breeders, $3 00 to $5.00 each. Purely mated guaranteed. Send for circular. J. I. Danielson,
Rt. No. 7, Fairfield, Iowa.

SITUATIONS.

Wanted—Position in apiary by man of some experience. Please apply to
Edw. C. Towne, Elroy, Wis.

Wanted—Young man who has had good experience in taking care of bees, to assist in apiary of 150 colonies. Must have best of references as to character and otherwise. Address, Mrs. Robt. Elliston, Princeton, Ill.

HONEY AND BEESWAX

Wanted—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

Comb Honey our specialty. Highest market prices obtained; prompt returns made. Send us your shipments
Albert Hurt & Co., New Orleans, La.

New Crop of rich, white mesquite and catclaw honey. Bulk comb and extracted. Comb in two 60-lb. cans, 11c; in 6-10 lbs., 11½c; in 12-5 lbs., 12c. Extracted, 2c per pound less. C. S. Engle, Beeville, Tex.

For Sale—Extra good light amber mesquite and alfalfa honey. Two 60-pound cans to case, 5c a pound; 5 and 10 pound friction-top pails, 8c per pound per hundred weight. Cash with order on board of cars here.
B. A. Hadsell, Buckeye, Ariz.

For Sale—Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

FOR SALE

For Sale or to let on shares 250 well kept colonies, in irrigated alfalfa region (Kansas); season 1914 averaged 110 pounds. Address, C. O. Davison, Presby. Hosp., Pittsburg, Pa.

For Sale—Friction-top pails, 5-lb. size, per 100, $4.50; 500, $21.25; 10-lb. size per 100, $6.25; 500, $30. Low prices on other sizes in bulk. Also furnished in re-shipping cases. Shipped from Chicago.
A. G. Woodman Co., Grand Rapids, Mich.

For Sale—150 Alexander feeders, 12c each, used one season. $16 cider mill, $8.00. 800 wire moving screens, strong frame, 600-8 fr., 4c; 200-10 fr., 5c. 4-90 gal. honey tanks, used one season, $6.00 each. 4 fr. Root automatic reversible extractor, $12.50. New $70 Reflex camera, $55. An Eastman 4x5, 18 in. bellows, cost $32, $15. 100 8-fr. hive bodies, painted, frames wired, 50c each. 200 new zinc queen excluders, 20c each. Empty 60-lb. cans, 2 in a case, 40c each. Will sell for cash or will trade for honey, or bees in two-pound packages Wesley Foster, Boulder, Colo

For Sale—Two-frame Cowan reversible extractor, used one season, $8.00. 40 4x5x1⅜ plain section supers, complete with fences, holders and springs, used one season, Root's make, $10. Ed Swenson,
Spring Valley, Minn.

For Sale—Ames' hulling and scarifying machine for sweet clover seed; used but two weeks; delivered to you $5.55. Indian motor cycle, $60. Deering mower, excellent condition, $15. 400 potato sacks, 3c each. 30 seamless bags (new) 20c each. Will trade for honey. Wesley Foster, Boulder, Colo.

For Sale—200 colonies of bees, 5 acres of land. N. L. Anderson, Spearfish, S. Dak.

Bee Location for Sale, including spring water business, 100 colonies of bees and all fixtures with residence and 1 or 2 acres of land; situated one mile northwest from city of Sheboygan, Wis. If interested act quick. Address, Crystal Spring Water Co.,
R. R. No. 3, Sheboygan, Wis.

HONEY LABELS

Honey Labels that create a favorable impression on the buyer. Dealers admire them and give them prominence. Catalog Free. Liberty Pub. Co., Sta. D, Box 4H. Cleveland, O.

SUPPLIES.

Ten-Frame Supers nailed up, only 30c each. All new. W. D. Soper, Jackson, Mich.

Good second hand 60-pound cans, 25c per case of two cans f. o b. Cincinnati; terms cash. C. H. W. Weber & Co., Cincinnati, O.

Beekeepers' Supplies sold at a reduction. New prices now ready. Send for list free.
W. D. Soper, Jackson, Mich.

Do You want the best foundation fastener? Then buy "The Pangburn," price $1.75, postpaid, mfg. by W. S. Pangburn,
Center Junction, Iowa.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

For Sale—Good second-hand pound cans, 25c per case of two cans, f. o. b. Chicago. Cash with order. E. H. Bruner,
3836 North Kostner Ave., Chicago, Ill.

70 T Tin supers for 10-frame hives with inside fixtures; also 210 fences and 180 section holders for 4¼x4¼x1½ plain boxes. Bargain if sold at once. G. L. Allen,
R. D. No. 2, Ulster, Penn.

Notice—Beekeepers when in need of supplies write us for prices We can save you money. We make a specialty of odd sized hives. The M. C. Silsbee Co.,
Cohocton, Rt. 3, N. Y.

For Sale—Medium brood foundation, one to ten lbs., 52c per lb. Up to 25 lbs., 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana. Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade.
J. F. Archdekin, Bordlonville, La.

Sections $2.85 per thousand. The Beekeepers' Review is making a lead on sections and furnishing their subscribers with *any make you prefer* at from $2.85 to $4 50 per M. Order the same make of section as usual, but do not send us but $4.50 per M. for the No. 1 grade and 50c less tor the No. 2 grade. One make can be furnished as low as $2 85 per M. for the No. 2 plain. *Do not buy a single supply* for the bees without first investigating our cooperative plan of buying. Write your wants to the Beekeepers' Review, Northstar, Mich.

MISCELLANEOUS

Deer Heads nicely mounted. Will trade for bees. O. G. Mills, Bayfield, Wis.

For Sale—California little suburban farms, suitable for poultry, fruit and garden. Terms, write E. R. Waite,
Shawnee, Okla.

For Sale—A fine farm in Florida, 10 or 20 acres, 2 acre orange grove, also apiary. Fifteen minutes walk from railroad depot. Write for particulars. Chas. Mack,
Mannville, Putnam Co., Fla.

For Sale—A good bee location; 40 acres with good house and barn; also 30 colonies of bees with fixtures. Located in the central part of Wisconsin. For further information write to Geo. Delano,
Royalton, Waupaca Co., Wis.

American Bee Journal

GUARANTEED purely mated three-banded Italian queens ready in May. Price; Select untested $1.00 each; 6 for $5.00. Select tested, $1 75 each. J. M. Gingerich, Kalona, Iowa.

FREE FOR SIX MONTHS—MY SPECIAL offer to introduce my magazine, "INVESTING FOR PROFIT." It is worth $10 a copy to any one who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how any one, no matter how poor, CAN acquire riches. INVESTING FOR PROFIT is the only progressive financial journal published. It shows how $100 grows to $2200. Write NOW and I'll send it six months free. H. L. Barber, 546-20 W. Jackson Blvd., Chicago, Ill.

POULTRY

IF YOU breed fancy poultry, offer your surplus stock or eggs for sale in our classified columns.

155 EGG INCUBATOR, half price. Exchange for honey extractor, Winchester shotgun or offers. Lorenzo Clark, Winona, Minn.

RHODE ISLAND REDS—Both Combs. High grade; carefully bred; none better. Prices reasonable. Stock and eggs, by setting or hundred lots. Mating list free. Fred Oertel, Box 24, Brighton, Ill.

Statement of Ownership, Management Circulation, Etc.,

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[Signed] M. G. DADANT, *Manager*.

Sworn to and subscribed before me this 3d day of April, 1916.

[SEAL.] R. R. WALLACE.
Notary Public.

My Commission expires Sept. 21, 1917.

Archdekin's Fine Italian Queens
3 BANDED
Prolific—Hardy—Gentle—They are Persistent—Profitable Producers—None Better

Prices	Before July 1			After July 1		
	1	6	12	1	6	12
Untested.....	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.00
Tested........	1.50	8.00	15.00	1.00	5.50	10.00
Sel. Tested...	2.00	10.00	18.00	1.50	8.00	15.00
2-fr. Nuclei...	2.50	14.00	26.00	2.25	12.00	22.00
1-lb. pkg. bees	1.50	13.00	25.00	1.25	7.00	13.00
2-lb. pkg. bees	2.50	14.00	28.00			

Above prices of nuclei do not include queen. Add price of queen wanted. Satisfaction and safe arrival guaranteed. Absolutely no disease in this country. Get your order in early and secure prompt delivery. Orders booked if half of amount accompanies order. Queens ready April 15th. Nuclei and packages May 1st.

J. F. ARCHDEKIN, Bordelonville, La.

Three-Band Italian Stock Only

Eight-frame colony (new hive) $8.50. Three-frame nucleus with warranted 3-band queen, $4.00. Two-frame nucleus with warranted 3-band queen, $3.00. Untested warranted 3-band queen, $1.00. Tested queen, $1.25. Tested Italian queens with either colonies or nuclei, 50c more. No disease; State inspected; 30 years a breeder. Shipments made after May 15th. Orders booked now

E. A. LEFFINGWELL, ALLEN, MICH.

WESTERN BEE-KEEPERS can save honey and get the best goods obtainable, especially made to meet Western condition. Send for new catalog and special price list to

Colorado Honey-Producers' Association
Denver, Colorado

Italian Queens—Three-Banded

We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never have had. Our prices are as follows; Untested queens, $1.00; $10 per dozen. Tested, $1.25 each; $12 per dozen. Select tested, $2 00 each; $20 per dozen. Breeding, queens, $5.00 each. Special prices on large orders. Our customers must be pleased Safe arrival guaranteed. Send check with orders to

J. W. TAYLOR & SON
Dept. F, Box No. 25, Beeville, Bee Co., Texas
Prices on nuclei on request.

THREE-BANDED ITALIAN QUEENS

They are bred from imported mothers. They are the best for honey-producing purposes; very gentle and not incline to swarm If you buy once you will buy always.

Prices	April 1 to July 1		
	1		12
Untestted........................	$ .75	$ 4.25	$ 8.00
Select untested..............	.90	5.00	0.00
Tested..........................	1.25	7.00	13.00
Select tested..................	2.00	11.00	20.00

We GUARANTEE that all queens will reach you in good condition to be purely mated, and will give perfect satisfaction. All orders filled at once.

L. L. FOREHAND
Fort Deposit, Alabamba

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

PRICES—Untested, April, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

HONEY AND BEESWAX

CHICAGO, April 18.—Trading is of a very limited nature in both comb and extracted honey; especially is this true of the comb situation. Our stocks are not heavy, but there is a great deal of it offered on the market, and prices are uncertain, ranging for best grades of white comb from 12@15c per pound, but sales are made mostly at 13c per pound for No. 1 to fancy. Extracted, white, 7@8c per pound; amber grades 6@7c per pound. Beeswax 30@32c per pound.
R. A. BURNETT & CO.

DENVER, April 18.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: No. 1, per case of 24 sections, $2.03 per case; No. 2, $2.70 per case. White extracted, 8½@8¾c; light amber, 8@8¼c; amber 7@8c. We pay 25c per pound in cash and 27c per pound in trade for clean yellow beeswax delivered here.
THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

NEW YORK, April 17.—There is no demand for comb honey to speak of, and while No. 1 and fancy white is cleaned up there is quite a stock of off grades still on the market for which there is practically no demand and hard to dispose of at any reasonable price.

The market on extracted honey is in a little better shape and prices now show an upward tendency, especially as on fancy West India honey. Supplies sufficient to meet all demands.

Beeswax steady at from 29@31c per pound, according to quality.
HILDRETH & SEGELKEN.

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free Untested queens $1 each; doz., $9. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

4 MONTHS FOR 10c
Trial Subscription To Fruit and Garden Paper

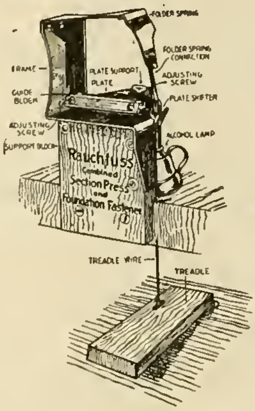
Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

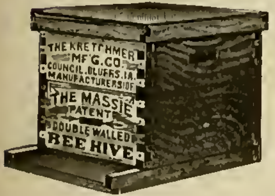
MAKE MORE PROFIT BY REDUCING COST OF PRODUCTION



Comb-Honey producers can put up their sections complete in less than half the time with a **Rauchfuss Combined Section Press and Foundation Fastener.** Now used by hundreds of Western Beekeepers who would not think to be without it any more. **It is guaranteed to do more and better work than any other device on the market.** Your money back if not entirely satisfactory. Made for 4 1-4x4 1-4 and also for 4x5 sections. **Price $3.00, complete with lamp and treadle, delivered postpaid anywhere in the United States.** Write for 68-page illustrated catalog of the Best Bee Supplies made.

THE COLORADO HONEY PRODUCERS' ASSOCIATION
1424 Market Street, Denver, Colorado

The Double-Walled Massie Bee-Hive



THE MASSIE HIVE
For Comb or Extracted Honey

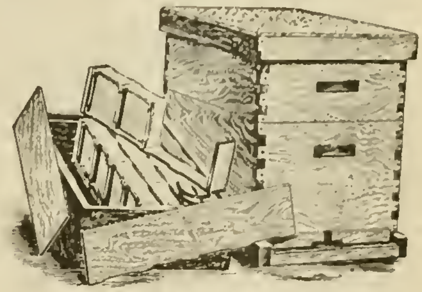
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames Made from White Pine

THE VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

WHY NOT GIVE US A TRIAL ORDER? **SATISFACTION FULLY GUARANTEED** **EARLY CASH ORDER DISCOUNTS**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 1100 3d St., Council Bluffs, Iowa

GOLDEN ITALIAN QUEENS

Mr. Beekeeper, do you want the best queens that money can buy? If so, try the strain of Goldens that for fifteen years has been a leader. All queens reared from superior Golden mothers and mated with select Golden drones are large, vigorous and prolific; the bees gentle and hustlers, and are noted throughout the United States as a disease-resisting strain. Mated from strong nuclei, three to five full Langstroth frames. No disease. Safe arrival (United States and Canada), purity of mating and satisfaction guaranteed. Write for descriptive circular.

PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	11.00	18.00

Breeders, $5.00 to $25.00

BEN G. DAVIS, Spring Hill, Tennessee

Please mention Am. Bee Journal when writing.

Sweet Clover Seed

QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu. 60 lbs.	5 bu. lots per bu.	10 bu lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22 50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

OUR TEXAS BEES

Having locations where I can rear bees almost the year around. I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, $1.50; 2-pound packages, $2.50; 10-pound lots, $13; 100 pounds for $120. Queens shipped with pound packages at 75 cents each. By mail at $9.00 per dozen. Special prices to dealers in large lots.

WM. ATCHLEY, Mathis, Texas
"The Texas Beeman"

ITALIAN QUEENS

THREE-BANDED

Ready April 1, of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey gatherers. Untested, $1.00; 3, $2.75; 6, $5.00; 12, $9.00. Tested, $1.25; 6, $6.50; 12, $12.50. Send for my free circular and price list, and see the natural conditions under which my queens are reared. Will book orders now.

JOHN G. MILLER
723 C Street, Corpus Christi, Texas

Notice to Northern Beekeepers!

WE are making a specialty of the pound package trade, and will ship from our yards at Fitzpatrick and other points in Alabama, packages and queens during April and May at the following prices: One pound with queen, $2 00; without queen, $1.25. Two pounds with queen, $2.00; without queen $2.15. Three pounds with queen, $3 80; without queen, $3.00. Untested queens, single, $1.00; six for $4.50; dozen for $8.50; in lots of 50 or more, 60c each. Select tested, $2 00. Breeders, $3.50. A special price quoted on packages of 50 or more. We have improved our pound package, making it larger, lighter and giving more ventilation.

Our vast experience with the Root Company, and our father, A. B. Marchant, enables us to know what the trade wants and needs, and we are well equipped to take care of any and all orders regardless of size. Our aim is to carry surplus so as to be enabled to fill all orders by return mail and on the day they fall due. Our stock is of the three-band Italian, and has stood the test for 20 years. **There is none better.** We have sold the A. I. Root Company two cars of bees and several hundred queens, and will sell again this season.

We guarantee safe arrival, freedom from disease, pure mating, no inbreeding, and your money refunded if not satisfied.

References: The American Exchange Bank of Apalachicola, Fla.; also The A. I. Root Company. Insure yourself against loss by placing your orders with

The Marchant Bros., - Union Springs, Ala.

OUR POST-OFFICE ADDRESS WILL BE UNION SPRINGS, ALABAMA

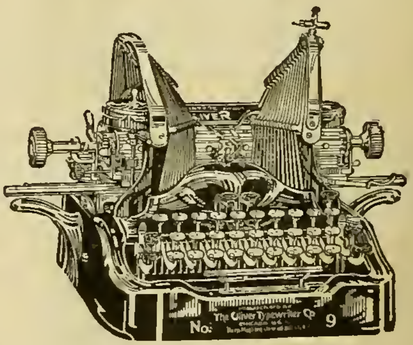
A NEW MODEL TYPEWRITER!

The OLIVER No 9
The Standard Visible Writer

Yes, the Crowning

TYPEWRITER

Triumph Is Here!



Buy it NOW!

It is just out—and comes years before experts expected it. For makers have striven a lifetime to attain this ideal machine. And Oliver has won again, as we scored when we gave the world its first visible writing. There is truly no other typewriter on earth like this new Oliver "9." Think of touch so light that the tread of a kitten will run the keys!

CAUTION!

The new-day advances that come alone on this machine are all controlled by Oliver. Even our own previous models—famous in their day—never had the Optional Duplex Shift.

It puts the whole control of 84 letters and characters in the little fingers of the right and left hands. And it lets you write them all with only 28 keys, the least to operate of any standard typewriter made.

Thus writers of all other machines can immediately run the Oliver No. "9" with more speed and greater ease.

WARNING!

This brilliant new Oliver *comes at the old-time price.* It costs no more than lesser makes—now out-of-date when compared with this discovery.

For while the Oliver's splendid new features are costly—we have equalized the added expense to us by simplifying construction.

Resolve right now to see this great achievement before you spend a dollar for any typewriter. If you are using some other make you will want to see how much more this one does.

If you are using an Oliver, it naturally follows that you want the finest model.

17 Cents a Day! Remember this brand-new Oliver "9" is the greatest value ever given in a typewiter. It has all our previous special inventions—visible writing, automatic spacer, 6½-ounce touch—*plus the Optional Duplex Shift, Selective Color Attachment* and all these other new-day features.

Yet we have decided to sell it to every one everywhere on our famous payment plan—17 cents a day! Now every user can easily afford to have the world's crack visible writer, with the famous PRINTYPE, that writes like print, *included FREE if desired.*

TODAY—Write for Full Details and be among the first to know about this marvel of writing machines. See why typists, employers, and individuals everywhere are flocking to the Oliver. Just mail a postal *at once.* No obligation. It's a pleasure for us to tell you about it.

THE OLIVER TYPEWRITER CO., Oliver Typewriter Bldg., Chicago

You can Rent an Oliver Typewriter 3 months for $4.00

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. The **CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Missouri

START THE SEASON RIGHT

By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE

SAVES
HONEY
TIME
MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST

BEE SUPPLIES

Best Sections, Best Shipping Cases

Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.

H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

FIELD SEEDS

Full line including seed corn. Write for price lists.

F. A. SNELL
Milledgeville, Illinois

Queens and Bees
FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5.00 each. One pound package bees, $1.25; 25 packages, $1 00 each; 2-pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2 75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

NOW'S REPAIRING TIME

CYPRESS "THE WOOD ETERNAL"

DON'T REPLACE ROTTEN WOOD WITH WOOD THAT WILL ROT

CYPRESS LASTS PRACTICALLY FOREVER

We have a word to suggest to you practical men of affairs—you who build and maintain Bee Farms. The matter of annual repairs is no trifling consideration. Unless you use a lumber that possesses real INVESTMENT VALUE, these repair bills will eat great holes in the net income of your property. Cypress is so well certified—its character for "Staying Put" is so thoroughly established—that you are about certain to use it in the early spring repair jobs. Practically all live lumber retailers carry Cypress stocks, so you need have no trouble about getting exactly what you want. If your local dealer has no Cypress in his yard, write us and we will tell you where to get it.

AUTHENTIC INFORMATION, FREE

Write our "All-Round Helps" Department if you are at all perplexed about what is best to do in the matter of lumber, for original work or for repairing. There are 41 volumes in the Cypress Pocket Library, covering all sorts of uses for the "Wood Eternal," and they are free to you. Vol. 1 is a reprint of Bulletin No. 95, Forest Service, Department of Agricultre—a certificate of the U. S. Government. Better get this booklet. Vol. 36 tells how to make easy a dozen hard jobs in Carpentry. Each of the 41 books is free. Vol. 1 contains a list of titles of these books. Start with Vol. 1; it's free to you Why not write right now?

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., and
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

EARLY-ORDER DISCOUNTS ON

DADANT'S FOUNDATION

Send us a list of the bee-supplies and foundation you will need for 1916, and we will gladly quote you our best prices.
It will pay you to buy early.

BEESWAX—We buy beeswax the year around and pay highest cash and trade prices. Light yellow wax from cappings is especially wanted. Your BEESWAX worked into foundation at moderate rates.

NOTE Old combs cappings, and slumgum rendered on shares. Send for our terms. We will get all the wax and save you a "mussy" job.

DADANT & SONS,
HAMILTON, ILLINOIS.

Vol. LVI. 1916

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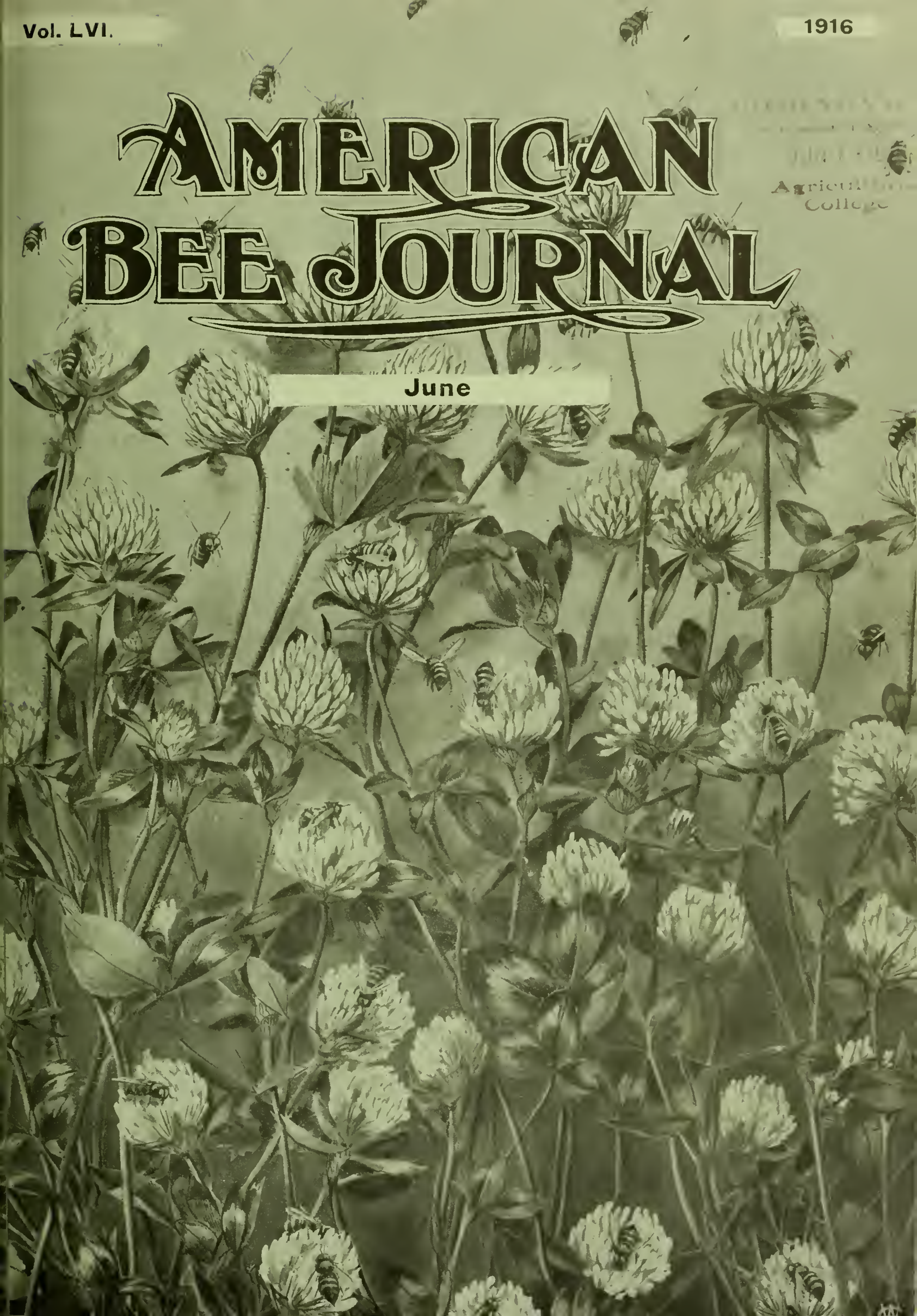
Agricultural
College

AMERICAN BEE JOURNAL

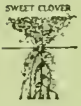
June



BEES AND HIVES

If you are in need of supplies or bees shipped promptly, write us. Our stock is complete, no delays. Chaff and single walled hives. Bees by the pound, nucleus or full colonies. Untested queens, $1.00. Tested, $1.25. Catalog free.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.



Unhulled and Scarified Hulled
WHITE SWEET
CLOVER
YOUNG-RANDOLPH SEED CO., OWOSSO, MICH.

Bee-Supplies

LET US FIGURE WITH YOU

We know we can satisfy you on quality. Write for catalog.

C. C. CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

Fine Queens and Bees

Queens from my honey-gathering strains of three bands and goldens at the following low prices: Untested, one, $1.00; 6, $5.00; 12, $9.00; 25, $17.50; 50, $32; 100, $60. Tested queens, 1, $1.50; 6, $8.00; 12, $15. Nuclei or lb. packages, 1-fr. with untested queen, $2.50; 6, $14; 12, $26; 2-fr., 1, $3.50; 6, $18; 12, $34. If tested queens are wanted add price as above

D. E. BROTHERS
Attalla, Ala.

WE ARE READY

To figure on your wants. Send us a list of goods and we shall be pleased to quote you the very lowest price for the best goods. Established 1890. Our catalog may interest you.

H. S. DUBY & SON, St. Anne, Ill.

Northern Bred
Italian Queens

More hardy than Southern bred. Try them once. Untested, $1.00. Sel. tested, $1.50. Plans for beginners, "How to Introduce Queens and Increase," 25 cents.

E. E. MOTT, GLENWOOD, MICH.

NEW ENGLAND

Beekeepers will find a full line of supplies in Boston. Send for catalog.

H. H. JEPSON
182 Friend Street, Boston, Mass.

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4 50	8.00	16.00
Warranted	1.10	5 50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

Our Reference—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

Watchful Waiting Causes You to Get Le

So Buy your Bee Supplies Now.
Promises to be a Honey year. Ship on day of receipt of order.
Lewis' Beeware—finest in the world.
Send for our 1916 Catalogue.
We do Beeswax rendering. Ship us your old Combs and Cappings. W
for prices.

THE FRED W. MUTH CO.
204 Walnut St. THE BUSY BEE MEN. CINCINNATI,

SAFETY FIRST

You are always safe in buying Murry's bees and queens. Unexcelled for prolificness, gentleness and honey-gathering qualities. No disease. Health certificate with each shipment of bees and queens. Three-banded Italians. Goldens.

Queens	May 1st to Nov. 1st 1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.25	6.50	12.00
Select tested	1.50	8.00	15.00

Untested queens per 100, $62.50

I operate about 500 queen-mating nuclei, besides some 300 colonies in outyards, and ship by return mail. For prices of bees by the pound and nuclei, see April and May issues of this Journal.

H. D. MURRY, MATHIS, TEXAS

Beekeepers' Supplies

Such as Winter Cases, Hives, Sections, Covers, Bottoms, Bodies, Supers, Brood-frames of every description, Shipping-cases, Section-holders, Comb-foundation, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Sheboygan, Wis.

EVERY FRUIT GROWER

Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

BETTER FRUIT

and begin with the January issue, our Special Spraying Annual. Subscription price $1.00 per year in advance.

BETTER FRUIT PUBLISHING COMPANY
Hood River, Oregon

Italian Queens—Three-Banded

We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never have had. Our prices are as follows: Untested queens, $1.00; $10 per dozen. Tested, $1.25 each; $12 per dozen. Select tested, $2.00 each; $20 per dozen. Breeding, queens, $5.00 each. Special prices on large orders. Our customers must be pleased. Safe arrival guaranteed. Send check with orders to

J. W, TAYLOR & SON
Dept. F, Box No. 25, Beeville, Bee Co., Texas
Prices on nuclei on request.

THREE-BANDED ITALIAN QUEENS

They are bred from imported mothers. They are the best for honey-producing purposes; very gentle and not incline to swarm. If you buy once you will buy always.

Prices	April 1 to July 1 1		12
Untestted	$ 75	$ 4.25	$ 8.00
Select untested	.90	5 00	9.00
Tested	1.25	7 00	13.00
Select tested	2 00	11.00	20.00

We GUARANTEE that all queens will reach you in good condition to be purely mated, and will give perfect satisfaction. All orders filled at once.

L. L. FOREHAND
Fort Deposit, Alabama

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

PRICES—Untested, April, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

THREE-BANDED ITALIANS

Honey-gatherers at the following prices:

Untest,. warranted purely mated queen	$1 00
Tested	1.25
3-frame nucleus and untested queen	3 50
2-frame nucleus and untested queen	2.50
8-frame nucleus and untested queen	7.00

(Colonies shipped in a new hive.)

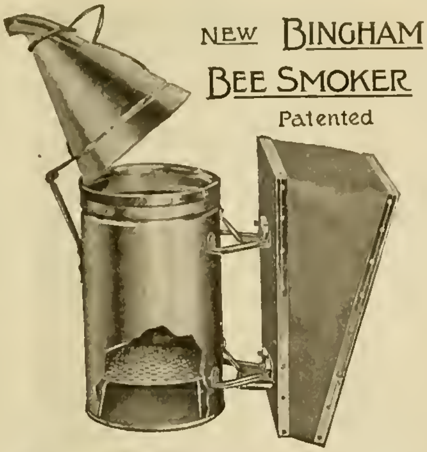
Tested queens in colonies or nuclei, 50 cts. more. No disease. State inspected. Orders booked now. Shipment after June 20th.

E. A. Leffingwell, Allen, Michigan

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. The best all-purpose bee.

H. W. FULMER
Box 10, Andalusia, Pa.



NEW BINGHAM
BEE SMOKER
Patented

BINGHAM BEE SMOKER

Nearly forty years on the market and the standard in this and many foreign countries. It is the all-important tool of the most extensive honey-producers of the world. For sale direct or by all dealers in Beekeepers' Supplies.

Smoke Engine, 4-inch stove	28 oz.	$1.25
Doctor, 3½-inch stove	26 oz.	.85
Two larger sizes in copper extra.		.50
Conqueror, 3-inch stove	23 oz.	.75
Little Wonder, 2½-inch stove	16 oz.	.50

Hinged cover on the two larger sizes, postage extra.

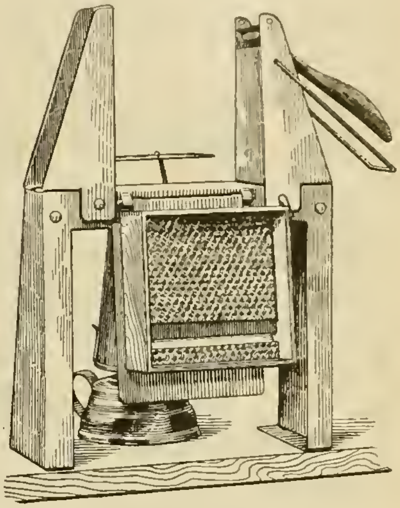
WOODMAN'S SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, saving a great amount of labor. Hundreds of them in use. The sale this year has increased wonderfully, and they give perfect satisfaction in every case when properly operated. Dadant & Sons say: "The sale on Woodman Section Fixers now far exceeds all others."

With top and bottom starters the comb is attached to all four sides, a requirement to grade fancy. Increase the value of your crop this season by this method. The best and most successful producers, such as Dr. Miller, use top and bottom starters. Their honey would ship across the continent without breaking down, even if only half completed.

Price $2.50 without lamp; with lamp, $2.75. Weight, 5 pounds, postage extra.

Adjustable to any size section. Send for special circular with large illustrations.



TIN HONEY CANS—LOW PRICES

Our three-year contract is protecting us from high prices until July 1st. We will give the beekeepers the benefit of our low prices, so be sure you secure your supply before that date. 60-lb. cans shipped from Ohio factory or Chicago—friction-top from Chicago. Give us the quantity wanted and let us figure with you. Friction-top cans and pails—5-lb. size, per 50, $2.50; 100, $4.50; 203, $8.50; 1015, $40. 10-lb. size per 50, $3 50; 100, $6.25; 113, $6.75; 565, $33.75.

A. G. WOODMAN CO., Grand Rapids, Michigan

BY ALL MEANS BUY A GOOD VEIL

Muth's Ideal Bee Veil, postpaid, 75c; with other goods, 70c.

OLD COMBS AND CAPPINGS

rendered into wax with our hydraulic wax press. Perfect work.

We buy your wax at highest market price. Write us.

THE FRED W. MUTH COMPANY
204 Walnut Street, - Cincinnati, Ohio

QUEENS! QUEENS! QUEENS!

We will make a specialty of shipping Queens, Nuclei and Full Colonies from Florida during the present month. We are breeding from queens that produced a surplus of 300 pounds per colony in a 24 day honey flow in Florida, and that are unexcelled for prolificness, gentleness and honey gathering.

When you order queens from us, you get QUALITY, PURITY AND HONEY GATHERERS. We can fill your orders from our famous Honey Gathering Strain for Queens, Nuclei and Full Colonies promptly, and guarantee safe delivery and entire satisfaction to you in every respect. Our aim is to give you the best stock on the market at the time you want it. Write for special price on orders of 50 or more. We ask you to give us a trial and let us prove to you that our stock is unexcelled by anything on the market.

Island Bred Italian Queens

	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24,00

Tested Breeding Queens, $5.00 and $10 each.

Prices on Nuclei and Full Colonisa Witheut Queens

1-frame nucleus	$2 00	5-frame nuclei	$ 5.00
2-frame nuclei	3 00	8-frame colony	8 50
3-frame nuclei	4.00	10 frame colony	10,00

Address all communications to

THE J. E. MARCHANT BEE & HONEY COMPANY, - Canton, Ohio

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

QUEENS OF MOORE'S STRAIN OF ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, 1, $1.00; 6, $5 00; 12, $9 00
Select untested, 1, $1.25; 6, $6.00; 12, $11,00

Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE
Queen Breeder Rt. 1, Morgan, Ky.

EUROPEAN FOULBROOD

is spreading in various parts of the country. The first step in its cure is a vigorous strain of ITALIANS

The Root Strain of Bees have Shown Themselves to be Highly Resistant

While we do not claim their introduction will alone cure European Foulbrood, or that it will not make a start in their colonies, we have reports of where they have, with a little help, fought themselves nearly clean of European Foulbrood which was all around them in black and hybrid colonies.

These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

PRICES.—Our regular price is $1.50 in June and $1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for $1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

The A. I. ROOT COMPANY - - - Medina, Ohio

Embargo on Bee Supplies
In the East

BEEKEEPERS in the Eastern States, particularly in New England, should not delay ordering their stock of supplies as early as possible. The Eastern railroads are congested and have even placed an embargo on shipments to various points, refusing to accept freight until their roads are unburdened. Ordering your requirements a month earlier than usual will not cost any more and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

Our New England States representatives, Ross Brothers Co., 90-92 Front Street, Worcester, Mass., have a large supply of "**Falcon**" bee-supplies, and are especially equipped to handle the New England States beekeepers' orders whether they be large or small.

Those beekeepers living in the New England States can order direct from the factory at Falconer, N. Y., or can write for the name of the nearest dealer as they find it more convenient.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

NOW IS THE TIME

To order your supplies, and thus have everything in readiness for spring

We carry a full line of Root's Goods at all times, and are always prepared to fill any and all orders on short notice.

Hives, supers, frames, sections, comb foundation, section-presses, foundation-fasteners, queen-excluders, queen, and drone traps, swarm-catchers, feeders, honey and wax extractors, capping melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the beekeeper requires for the proper conduct of an apiary.

C. H. W. Weber & Company, 2146 Central Avenue, Cincinnati, Ohio

Bee book free

YOUR SUCCESS IN BEEKEEPING DEPENDS ON THE KIND OF BEES YOU KEEP AND HOW YOU HANDLE THEM

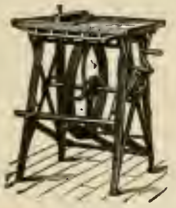
Blanke's 68 page book is not merely a catalog; it is an authoritative expert guide on the kind of apiary supplies that successful beekeepers have proved to be **profitable** in actual **use.** Blanke carries the largest stock of bee-supplies west of the Mississippi, and can make prompt delivery. Every article carried is perfect fitting. Whether you're a beginner or an expert beekeeper you ought to get the Blanke Bee Book—send for it today.

Fine Poultry Book Also Free

If you keep poultry, too, ask us for illustrated poultry book; full of valuable pointers on poultry raising, as well as a catalog of profitable poultry supplies.

BLANKE MFG. & SUPPLY CO., PIONEERS IN BEE, POULTRY AND DAIRY SUPPLIES, 209 WASHINGTON, AVE., ST. LOUIS, MO

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it."

Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

Q-U-E-E-N-S

Three-band Italians, bred for honey and gentleness from imported stock of medium color.

	1	6	12
Untested	$ .75	$4 25	$ 8.00
Select untested	1.00	4.75	9.00
Tested	1.50	8.75	17.00

Breeders, $3.00 to $5.00.

Bees in 1-pound packages, $1.25; no queen. If queen is wanted, add price.

Every queen **purely** mated. Safe delivery and perfect satisfaction guaranteed.

N. FOREHAND
Ft. Deposit, Alabama

TESTED QUEENS BY RETURN MAIL

$1.00 each

These Queens are not culls or inferior in any way because they are cheap. They were reared last September and October, and wintered in 4-frame nuclei, expressly for our early trade in tested queens We guarantee every queen to be good as the best. No disease in our apiary.

Untested queens early in April. $1.00 for single queen; $9.00 per dozen.

J. W. K. SHAW & COMPANY
Loreauville, Louisiana

LEATHER COLORED ITALIANS

About April 1st I wil again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free Untested queens $1 each; doz., $9. Choice tested.$1.50 each. Breeders, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

MAKE THIS A

LEWIS YEAR

While you are starting the year's work—getting your bees ready for business—taking stock of supplies on hand and speculating as to what the season's outcome will be

MAKE THIS RESOLUTION

That you will use LEWIS BEEWARE this year—because it means success insurance to you---because it means bee-hives and parts made of the best material by skillful workmen---because it means goods accurately and systematically packed---because it means sections made of bright lumber, highly polished, accurately dovetailed and scientifically grooved.

LEWIS HIVES ARE BUILT LIKE FURNITURE

Lewis sections are the kind that do not break in folding

You will find Lewis Beeware almost at your own door—thirty distributing houses in the United States and foreign countries. If you have not one of our catalogs, send for a copy at once.

G. B. Lewis Company

Exclusive Manufacturers—Lewis Beeware

Watertown, Wisconsin, U. S. A.

AMERICAN
BEE JOURNAL

Vol. LVI.—No. 6 HAMILTON, ILL., JUNE, 1916 MONTHLY, $1.00 A YEAR

GETTING YOUR HONEY TO MARKET

What Happens After the Honey Leaves the Producer and What is Necessary to Insure a Good Price?

THERE has been some complaint on the part of honey producers of late that honey is not moving as it should and that prices are too low. It is the policy of the American Bee Journal to render assistance to its readers if possible and accordingly the staff correspondent was sent to Chicago to see if he could find out where the trouble is and give the producers some hints that would assist in marketing next year's crop. February is usually the dullest month for honey sales and the dullest possible time ought to be the best time to find where the trouble lies, so this was done in February.

In order to learn as much as possible about conditions an effort was made to follow the honey from the producer to the consumer. This involved a study of the conditions of transportation by freight or express, a visit to the wholesale district and to the retail stores which serve the best trade.

One point that soon became very apparent was that of the hundreds of commission firms on South Water street only a few handle honey at all. There were hundreds of crates of cabbages, celery, sweet potatoes, oranges, apples, and other staple products to one case of honey. It did not take the writer fifteen minutes to decide that the trouble was not overproduction.

After talking to a number of commission merchants who do not handle it at all as well as those who do, it began to look like the trouble was of quite a different kind. It looks very much to the writer like it is improper distribution and lack of incentive for the merchants to push our product. A merchant dislikes to establish a trade for a product which he is unable to supply. If even twenty per cent of the commission merchants should undertake to establish a trade in honey and should succeed to the extent that a few have done the supply would not last one third the year. If a man orders honey from his grocer and is unable to get it, maple syrup or corn syrup will take its place and the next order will be for the substitute.

Some beekeepers are forever talking about overproduction and lack of demand. When corn flakes first appeared on the market there was no demand but the manufacturers proceeded to create a demand by extensive advertising and to fix the price at a point which would pay for their product and pay for the advertising in addition. In our March issue Mr. Gano tells how the orange growers have increased their output more than three hundred times and how they have increased the demand for oranges and the price at the same time.

HONEY.
WE PRODUCE IT.
WE SELL IT.

Ed. Swenson, of Minnesota, Has No Trouble Selling His Honey. He Advertises.

Competition is very keen, especially in the large market centers. One firm visited, handled three million dollars worth of produce last year. This amount would make a pretty big hole in the honey crop for last season.

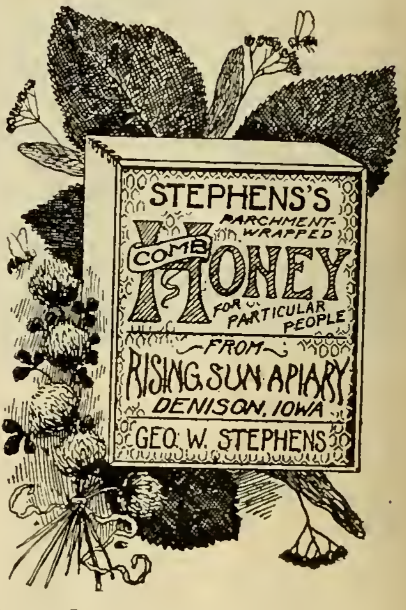
As it now stands there is no effort to supply honey at all seasons of the year. The crop is moved as quickly as possible after it is harvested with the result that the market is either crowded with honey or bare. A dealer who would build up a trade must depend upon buying large quantities long in advance and anticipate the demand of his trade for several months. The honey producers seem to be in about the same condition that the orange growers were in 1895 before they perfected their marketing organizations.

WHY FREIGHT RATES ARE HIGH.

To get back to the beginning, the first thing that confronts the honey producer who would send his honey to market is the matter of high freight rates. Too much care cannot be taken in packing honey for shipment, not only to guard against damage in shipment but also to keep the number of broken packages down to the point which will enable the railroad to carry honey at a low rate and still make a profit. Too many beekeepers take the attitude that it matters very little, for in case the shipment is damaged in transit the railroad company will pay for it anyway. This is a mistaken viewpoint as was pointed out by F. G. Snook, claim agent of the Erie road at the national convention. Claims for damages are a part of the regular expense account of the railroad company and when the damages absorb too large a part of the profits the rate is raised accordingly. Mr. Snook pointed out that it is not only the damage to the honey which results in a loss to the railroad but the damage to other goods which may happen to be in the same car with the broken package. As an example he cited a case where a broken package of honey damaged a shipment of silk. The railroad had to pay for both the honey and the silk, the latter of course, worth many times the value of the honey. In many cases the damage from broken packages could be avoided if the producer would use sufficient care in preparing his shipment. It is easy to see that in the end the entire loss must be borne by the honey producer. The careful shipper must divide the expense with the careless one, since the freight rate is made high enough to cover all such losses in addition to the operating expenses of the railroad.

The writer was for a time engaged in the practice of law and never during the years when his time was so occupied did he find any difficulty in getting a fair settlement for a client for loss or damage in shipment by freight. Some railroads are much more prompt in payment than others, but all with whom we had any dealings seemed entirely willing to make good any loss for which they were responsible. There was never any necessity to start suit on cases of this kind, for once proper proof of loss was presented settlement was secured without difficulty. The attitude of the railroads seemed fair enough and if it were possible for them to get into touch with the shippers and make clear the difficulties under which they work there would be much less friction because of high freight rates.

If the beekeepers desire to reduce freight rates, the first move to make is to educate the shippers to use more care in packing for shipment and thus reduce the amount of damage. If the careless man can be kept from shipping improperly crated honey there will be no difficulty in getting a reduction of freight rates on this commodity. Until then all honey shippers must contribute something to pay the losses.

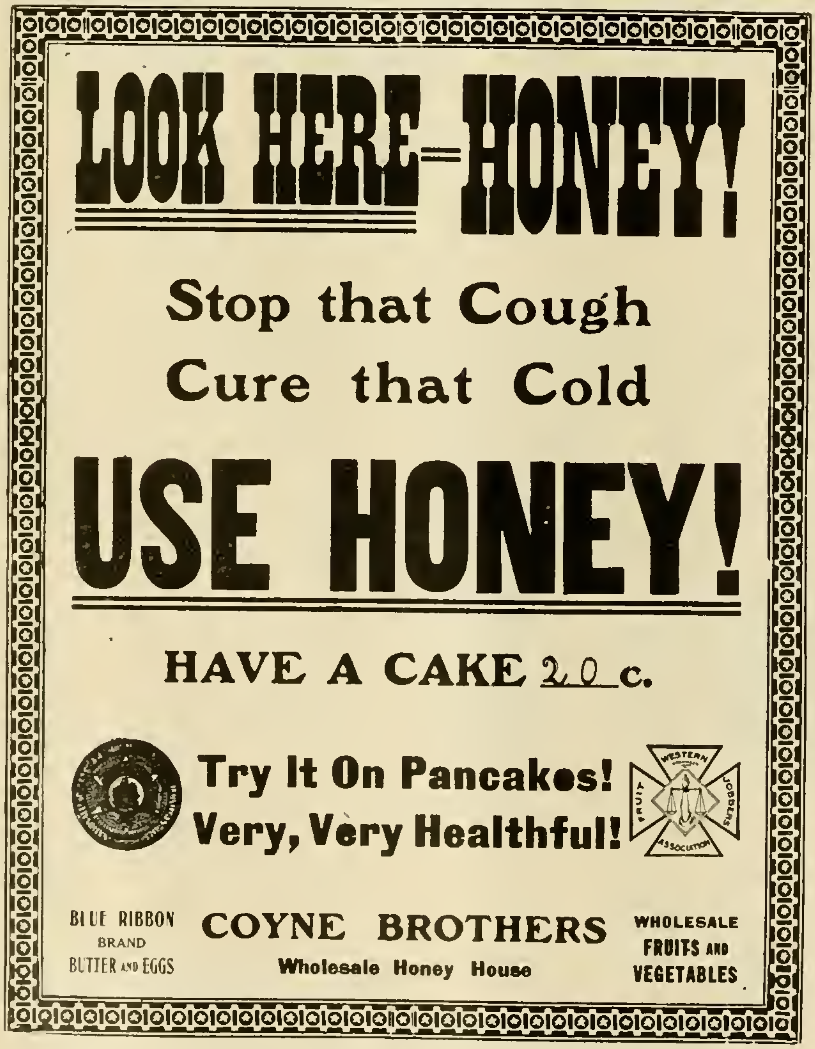


Design On the Stephens' Comb Honey Wrappers

VALUE OF ATTRACTIVE PACKAGES.

When a man goes into the large markets and sees the large variety of products that are offered, he at once learns that in order to appeal to the consumer any commodity to be used for food must be offered in the most attractive form possible. The writer saw a very good example of that in one of the well known commission houses when a retailer came in to make a purchase with which to supply his trade. There was a liberal supply of extracted honey in sixty-pound cans on the floor of the warehouse. He examined the various lots with a good deal of care, sampling each lot two or three times to make sure that the quality was good. The thing that impressed the writer, however ,was not the care this man used in looking for the best flavor, but that he refused to sample honey in rusty cans. There was one shipment in cans that were rusty on top and which had a rather unattractive appearance generally. He sampled honey only in bright new cans that did not show a particle of rust. When the writer asked the commission man about the difference in price he was informed that they were compelled to sell the honey in rusty cans at from one to three cents per pound less. In spite of the difference in price this buyer would not even look at it. Probably the shipper of that lot of honey will blame the commission merchant and charge him with stealing a dollar or two per case on the shipment. It surely is poor policy to save fifteen cents by using a second hand can in which to ship the honey to market and lose from sixty cents to one dollar and eighty cents per can in making the sale. If the writer had not already been convinced of the value of new packages for honey this observation would have convinced him.

However, another example was in store, with comb honey this time. The honey was well graded and in new shipping cases but seconds had been used which showed dark streaks of wood instead of the clean white of the first quality shipping cases. This



LOOK HERE=HONEY!

Stop that Cough
Cure that Cold

USE HONEY!

HAVE A CAKE 20 c.

Try It On Pancakes!
Very, Very Healthful!

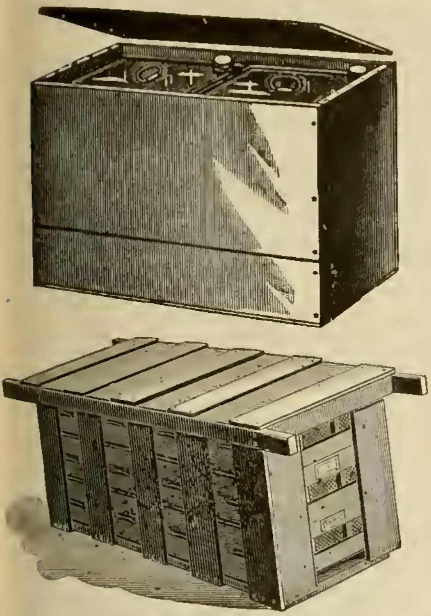
WESTERN FRUIT JOBBERS ASSOCIATION

BLUE RIBBON BRAND BUTTER AND EGGS

COYNE BROTHERS
Wholesale Honey House

WHOLESALE FRUITS AND VEGETABLES

ONE OF THE COYNE PLACARDS



Freight Shipments Must Be Protected

was on the floor of another store so that the two examples did not occur in the same establishment. Although the honey was of about the same quality, the more attractive package sold for fifty cents more per case than the other. Someone had bought inferior cases and had probably saved a few cents in the price but it cost two cents per pound in the selling price of the honey. The producer who must sell in a distant market should insist on the best possible quality in shipping cases, and before placing an order for supplies should know that the quality is O. K.

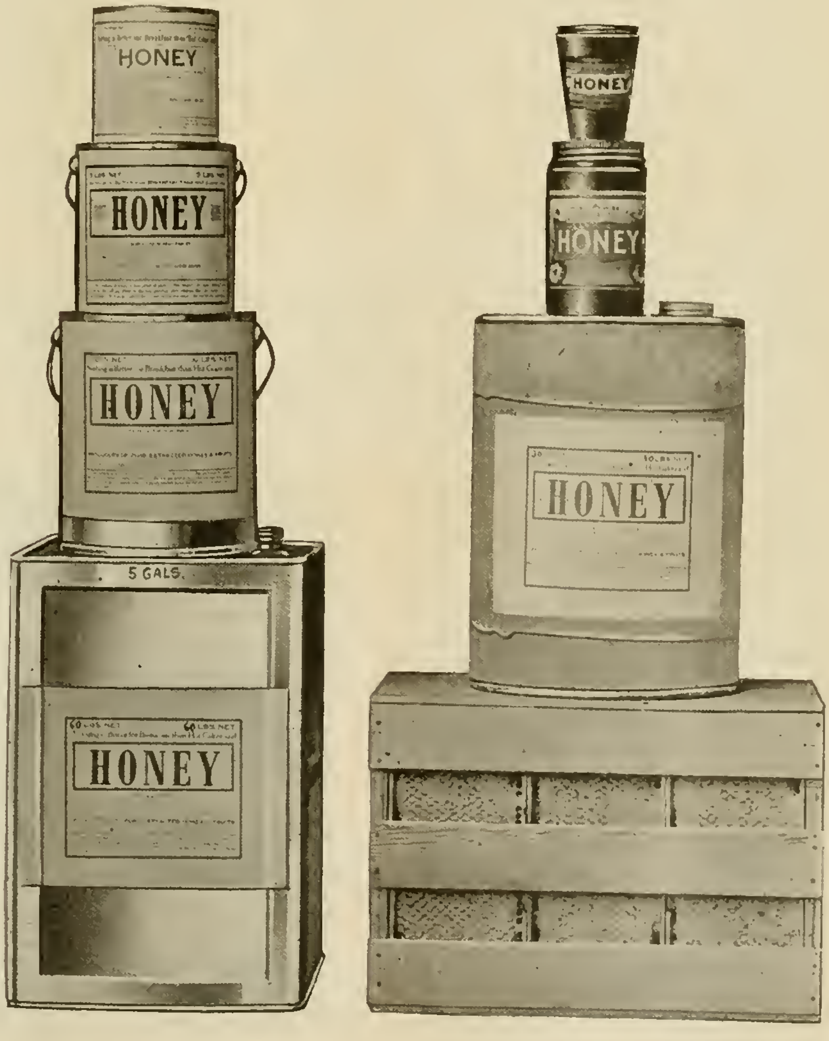
In this establishment the writer was shown a model shipment of comb honey. The grading was remarkably uniform, the sections were perfectly cleaned and the cases as clean and white as one could wish. This honey was selling at the highest price the market would afford. Possibly the curiosity of the reader may be aroused as was that of the writer to know where this honey came from. The only thing that worked against it was the fact that it was western honey and western honey has the reputation of granulating in the combs more easily than eastern honey and the buyers are somewhat partial to eastern honey on that account. This honey, however, was so nicely put up that its appearance insured a good sale. When asked where it came from the dealer replied, "Why that comes from Frank Rauchfuss of the Colorado Honey Producers." It thus became apparent that the advantage which this organization has gained in eastern markets is the result of the care used in grading and packing their product before it leaves their hands.

ATTRACTING THE CONSUMER.

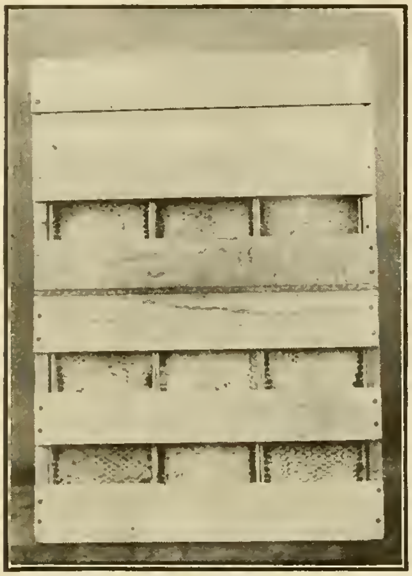
After noting the great advantage that attractive packages had in wholesale sales the writer was more interested than ever in the retail package. Retail stores were visited in the best part of Chicago where the rents paid for space would make most of us gasp. These stores sell to high class trade and they are as neat and clean as a parlor. The first one visited offered "Airline" honey. When asked if they handled no other kind they replied that they did not. The writer then enquired whether it was because the public insisted on "Airline, owing to its advertising, that they handled no other. The reply was that it was because of the clean packages in which it was offered. The salesman then showed the comb honey in clean, tight cartons, and the extracted jars wrapped in oil paper. There was no drip and every separate section or jar was as nice and clean as any other line which they had on their shelves. The public asked for "Airline" honey because of its advertising, but most buyers would as readily accept any other if equally attractive. This dealer handled "Airline" honey because it was clean and saved him the annoyance of dirty packages. The reason was clear enough and we went out to find a store that handled something else. We found it but a few doors away and the honey was the only sticky package that we found in that store. The extracted honey packages were sealed in the ordinary way and nearly every one showed a slight drip down one side. This little streak of honey would catch all the dust and thus it soon became anything but attractive. The label was printed in only one color so that altogether there was no comparison in the appearance of the brands. Had the writer been in search of honey for his own table it is easy to guess which he would buy if he knew nothing of either producer. Further more he left the store with the feeling that he had learned some lessons which he could utilize to good advantage in marketing his own honey crop. One does not have to look far to see that money spent in putting up our product in the most attractive package will come back several times over when we sell the crop.

PACKAGE MUST FIT THE TRADE.

This brings us to another consideration; the kind of package in which to ship. This depends altogether on the trade to which the honey is to be sold. If to a buyer who will sell it again under his own trade name it should have no mark of any kind excepting the net weight which the law requires. If on the other hand it is to be sold through some regular channel which recognizes the producer's trademark as an asset it



USE STANDARD PACKAGES AND HAVE THEM CLEAN AND NEAT



The Honey Sold for Less When Dark Streaks Showed in the Wood and Shipping Cases

should be labeled with the producer's own mark. In one warehouse there was a big pile of shipping cases marked "J. E. Crane & Son, Middlebury, Vt. One of the cases was opened and some of the sections removed. They were very nice and each was wrapped in a clean carton with the Crane name and the usual printed matter. The dealer remarked that he had been handling Crane honey for nearly thirty years. In this case the honey was known to the buyer and the name was a guarantee of quality. But a few weeks before the writer had asked for honey in the Boston market and had been shown a jar of extracted honey with the Crane label. There is no question but that it is greatly to the advantage of the seller to market his best product under his own trade name when he can do so. However, it often happens that when he goes into a strange market the only buyers who will present themselves will be those who buy to sell again under their own name and such would not buy honey with the individual trademark. It is well to correspond with the commission merchant with whom one expects to deal and learn something of the market requirements. Coyne Brothers who are among the largest sellers of honey in the middle west have a trade which they supply with comb honey in their own cartons and with each case they send a placard for advertising purposes. This trade has come to look for the Coyne Brothers brand. Honey sold to this trade is placed in the cartons and repacked after it reaches their warehouse. Of course not all of the honey that passes through their hands is handled in this manner.

GENERAL REQUIREMENTS.

While the writer interviewed a number of dealers both wholesale and retail the most satisfactory interviews were with Daniel J. Coyne of Coyne Brothers and R. A. Burnett. Mr. Burnett has sold honey since 1877 and Mr. Coyne nearly as long. Mr. Coyne began as a helper at $3.00 per week and worked up until he was getting $60. per week before he started in business for himself. Both men have specialized in honey for many years and were in position to give many pointers on the conditions in the honey market. When asked for some general advice to the honey seller they agreed on the following:

Sell through a firm that specializes in honey, for such a firm can get a better price. Be very careful about grading and packing and use corrugated paper lining for the shipping cases to catch drip. Both agreed that in general comb honey sells better in bright wood shipping case with glass, than in corrugated paper cases, and usually arrives in better condition.

Mr. Snook, the railroad claim agent, gave the following advice in regard to shipping: Use only factory-made shipping cases and load the honey so that the combs will be parallel with the rails. This will place the shock of shipment on the edges instead of face of combs. Use cement coated nails since they hold better, and use cushioned carriers. Stencil name and address on the package instead of using a shipping tag put on with tacks. Tags often get rubbed off and the shipment goes astray while the stenciled address cannot be lost. Also avoid as far as possible the shipment of comb honey in cold weather.

Grading and Packing Comb Honey

BY WESLEY FOSTER.

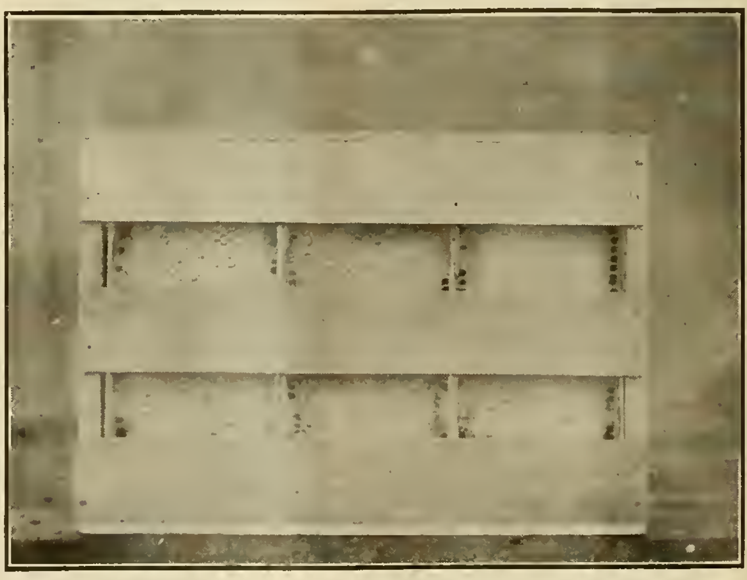
A FEW of our Rocky Mountain districts have a late honey flow. The beekeepers in these places have difficulty in selling satisfactorily because they cannot get their honey shipped for the early market, and if they hold for the late market in March, April and May, which is usually good, quite a proportion of the honey will granulate more or less. These mountain locations (many of them) have a dark or amber honey of poor quality, and for this reason the honey cannot be held. There is no alternative but to sell at a reduced price, which is usually done. We caution them to not hold this later honey for prices better than those offered for the early honey.

Beemen often make mistakes of this kind. An instance comes to mind. One car of comb honey was sold last fall at a very satisfactory price; in fact, at a higher price than had ever been secured for honey in that locality, Not a great distance from there was another car of honey for which 5 cents a case less was offered. The beekeepers held out for the additional 5 cents, and the buyer refused to take it. As a consequence the honey was not sold for some time, and when a buyer was secured the honey brought 35 cents a case less than the price originally offered.

I often hear it said that what beekeepers need is several buyers buying honey in a locality and competing with each other for the honey. This might help, but it is just a little easier for the buyers than for the beekeepers to have an understanding. Where prices around $3.00 a case for comb honey can be secured, the honey should be sold. No beekeepers should have had to take less than $2.75 for fancy honey last year in the Rocky Mountain country. Some prices lower than this were paid, but it was for honey packed late in the season, and some of it was not very carefully graded.

It is still the practice for some beemen to put sections in the No. 2 grade if half or two-thirds of one side of the section is sealed, provided it is good weight. Then another mistake is packing honey below the minimum stamped. It is strange that some will take the risk of getting into trouble with Uncle Sam, but it is done in some instances, and with the consent of the buyers.

The minimum net weight is placed at 10 ounces for No. 2, and it should under no circumstances run below



BEST QUALITY OF SHIPPING CASES SHOULD BE USED this. The average for the whole case should be well above this figure, and some of the buyers are requiring it. Weight of the honey carries farther than some of us realize.

Another thing that I have noticed is the packing of decidedly light amber and even amber combs in with white fancy honey. The objection to light amber and amber fancy honey cannot be well made, but the mixing of grades, shades and colors will not do. Let us follow the spirit and the letter of the rules as closely as it is possible for us to interpret them.

The poor quality of a few beekeepers' grading has driven buyers away from some of our heavy producing districts.

Boulder, Colo.

Marketing

BY ARTHUR C. MILLER.

"NO man is so far from market as he who has nothing to sell," is an old saying, but perhaps more true today than ever before. "Nothing to sell," means nothing which the market wants quite as much as absence of anything whatsoever. Some of the veteran producers, as well as some of the big producers who are not veterans, will say it does not apply to them. Perhaps so; however, it may. Let us see.

The Ontario man produces some crystal clear honey and tries to sell it to persons who have always had a strong dark honey. It does not sell. Reverse the conditions and the results are the same, but more understandable to the producer of light honeys. Honeys of familiar colors but unfamiliar flavors cause more trouble. They retail readily on their looks, but "repeat orders" fail to come. To the producer this is often hard to understand. To him his honey is as fine as the finest. All was well while he marketed it where the consumers were familiar with it, but when he sent it into other markets he was disappointed. Therefore, producing a good honey is only one step towards selling it. Knowing where to market it is equally important. The producer far from big centers of consumption must sell to jobbing houses who know where and how to place the honeys of all sections. So, also, must many producers nearer to markets but for sundry personal reasons not able to sell direct to retailers or consumers.

To these two classes quantity of crop (per colony yield) is the first consideration and quality is the second.

To the man selling to retailers or consumers, quality is or should be (and eventually will be) the first consideration, and per colony yield the second. These men can well afford to shift their apiaries until they find locations giving honeys of the finest flavors—natural blends. I have several times heard this policy scoffed at and quite as many times I have seen men who appreciated it take the market right away from the scoffers and often at higher prices. And the longer I raise and sell honey the more am I confirmed in my belief that all producers will profit by placing quality first. By quality I not only mean well ripened honey but fine flavored honey. The ignorant marketing of ill-flavored honeys or honeys not fitted to the markets they are offered in has been the cause of many persons stopping buying honey. There are but few of us who have not known or heard of such instances.

Therefore, as the first condition of good marketing let us place *quality*, good flavor, good body and good color.

As the second essential the honey should be put in new and perfectly clean packages fixed break-proof. Second-hand cans and other packages of an inferior character cost the producers each year many times more than they save in the first cost. It is almost impossible to make some men see this, but sooner or later it will come home to them in a forceful unpleasant way.

The foregoing applies particularly to extracted honey. In the matter of comb honey there are several other factors. First, is the importance of a fine honey from the same source year after year, and the locations giving a natural blend prove to be the most satisfactory in the long run. The producer can well afford to search long and carefully for suitable locations. And when he fails to get his sections filled with his usual grade of honey he had better dispose of it in anyway than to his regular trade. Comb honey of any particular brand is expected by the consumer to be the same year after year. The difficulty in obtaining this result will be well appreciated by all veterans.

I believe that no sections should be shipped away to any general market unless the combs fill the sections from top to bottom and are fully sealed; in other words, of extra fancy finish. I believe such a policy will in the long run prove the most profitable one. Could the producers see the sticky *messes* which reach the markets they might or at least some of them might be convinced of the folly of trying to ship sections other than those fully filled. Cartons remedy this somewhat, but often these are so sticky as to be almost or quite unsalable. If No. 1 or less perfectly filled sections *must* be sent to more or less distant markets they should be re-cartoned *after* reaching their destination if at all soiled.

Another cause of trouble with comb honey is insufficiently ripened honey. Sections containing honey naturally of light body or with unsealed cells containing honey, should be subjected to a drying process until the honey is thick and "gummy." Still another cause of trouble is the use of the cheapest possible cases. Use cases big enough for a layer of corrugated paper beneath, and all around. And the thicker the bottom and top of the case, the better. If the store clerk is watched for a few minutes and you see the way one case is banged down on top of another or dropped onto the floor with a bump, a better understanding will be had of the need of amply corrugated cushions and thick cases. Fumigation before shipping is desirable unless the honey is to be repacked at its destination. Successful comb honey marketing is a fine art which cannot be acquired in a day. If you do not fully understand it in all its intricacies you had better, both for yourself and for the rest of us, turn it over to some one who does.

The third essential of general selling is a knowledge of markets, something which relatively few producers have. It will be far better for most of them to join in a producers' association which can employ an expert to do the selling. And this brings up the matter of expenditures for literature, for knowledge of markets, and for associations. Beekeepers, like so many other agriculturists, are worse than parsimonious in such matters. Men whose incomes range from $3000 to $10,000 a year will haggle over dues of a dollar a year to an association and will say they can only afford one trade paper and at that will take a 52 cent one in preference to a dollar one. Ask them to spend $25 for such things and they will drop in a faint.

It would take a surgical operation to get wisdom into the heads of those persons. But there are others who if shown a saving or a profit in such expenditures will make them. Unfortunately the men best fitted to explain the matter are not always the ones on whom such duty devolves. The broad gauge men are not always the ones who take the most active part in the beekeepers' associations, and in the cooperative marketing bodies they are all too frequently outnumbered and out-voted by men of small experience and narrow vision. For a short time I have been urging the big fellows of certain sections to get together, assess themselves a sufficient amount to yield a substantial fund for work and take on the lesser men only as they find them willing to cooperate and be "broad gauge." The policy heretofore has been to "bid low to get the crowd." It surely has been tried long enough to prove its wisdom; now it is time to change.

Many producers for sundry reasons prefer to do their own selling, and if they had accurate knowledge of conditions of crop and markets would do so successfully. But it is seldom that they have such information or know where to get it. They depend on some one trade paper, and if that chances to err they suffer. To illustrate: Last fall one of the trade papers said that, owing to the large crop, prices would rule 15 to 20 percent below last year. Depending on that many producers sold for about that much less. But other producers knew better; they had the National Government's crop report, reports from various associations and personal letters from different parts of the country and they sold for 30 to 50 percent above what the others got. That fuller knowledge did not cost those who had it over three or four dollars a year. Did it pay? Was it not safer to depend on half a dozen sources of information and base action on deductions from them than to depend on one which this time happened to be wrong? For the crop proved to be short of the market and prices were equal to and in some places above last year.

Finally there is the matter of the cost of producing the crop.

Figuring costs is not a simple matter and needs fuller consideration than can be given it now. Perhaps it should have preceded this article on marketing, but the latter is still fresh in your minds (painfully so with some of you), so I guess it is as well to treat it first.

Providence, R. I.

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THE EDITOR'S VIEWPOINT

June Management

This is the most important month of the year, in the North and Middle States, for it is the month of swarms and large honey crop. Be sure and have the supers on all strong colonies early, especially if they are whitening the tops of the brood-combs. Give plenty of entrance room. Well shaded hives, young queens and ample ventilation will help prevent swarming, if there is also plenty of room for the surplus. An excess of drones is an incentive to swarming, as the burly noisy fellows are much in the way. No drones are reared where there is no drone-comb.

The bees should not be permitted to hang out in clusters. When this happens they need more super room, more ventilation or more shade.

If you want increase, beware of overdoing it. Better make less divisions and have all your colonies strong. Be sure that the queens reared are from the best mothers. Strong colonies with prolific queens are the key to success.

Beekeeping in Wisconsin

This is the title of Bulletin No. 264 of the Agricultural Experiment Station of the Wisconsin University. It is written by N. E. and L. V. France, and nothing more needs be said concerning it, as these names recommend it. Beekeeping is coming more and more to the front, and these publications are a great help.

The Sense Organs of the Bee

In this number our readers will find the first article of a summary by Dr. N. E. McIndoo concerning his studies of the sense organs of the honeybee. If Dr. McIndoo did not already possess titles to the attention of the public by his previous studies, it would only require looking at the photo which this issue also contains to recognize that we have to do with as serious and positive a scientist as Uncle Sam ever found among his people. Dr. McIndoo has volunteered to refrain from any scientific expressions in the descriptions here published, in order to make himself fully intelligible to all. As the manner in which bees recognize each other or distinguish between odors or flavors is of practical importance, we are all interested in the studies of this question. We may also take pride in the fact that America has come to the front with scientists who are leaving an imprint equal to that of the leaders in the Old World.

Loosestrife Honey

We received a short time ago a sample of loosestrife honey from Mr. R. H. Terpenning, of New York. This is the first time we have heard of this plant yielding honey in sufficient quantity to be graded separately. The honey is a very dark amber and rather strong in flavor. The "twang" resembles slightly that of the sumac of the East except that it is much stronger.

Standard Grades of Honey

We learn from the Western Honey Bee that California beekeepers are just now undertaking to do what should have been done many years ago, to standardize the grades of honey. Honey comes from so many sources and the mixtures vary to such an extent that it will be rather difficult to establish a standard, but once a standard is established it will be of untold value in marketing our product.

California beekeepers are informed that money can be borrowed on warehouse receipts of honey, at low rates, provided that it has been standardized, inspected and labeled by the State.

The matter of determining standards has been settled; honey will be inspected by the State Market Commission and a certificate issued showing the grade, and the packages labeled accordingly. With this assurance of the quality of the honey which will enable banking houses to estimate the probable price, money can be borrowed to nearly the full value of the crop at a very low rate of interest (probably from 3½ to 4 percent), which will enable the producer to hold his crop for a time in order to take advantage of the most favorable market.

We commend this move to beekeepers of other States.

Dr. N. E. McIndoo

Foreign Beekeeping

We are happy to say that, in spite of the bloodshed and strife, in war-torn Europe, the progress of beekeeping is continuing. The Swiss and Italian bee journals are appearing regularly. The French-Swiss or Romanic "Bulletin d'Apiculture" has not missed a single number. Its former editor, Mr. Ulric Gubler, resigned his editorial chair in March of last year, on account of advanced age. He was 80 years old on May 18, 1915, and this anniversary was celebrated not only by the Orphan's Home of which he has been the manager for over a quarter of a century, but also by the city and Canton of Neuchatel, who sent him numerous and valuable presents. He is still interested in bees. His successor in the management of the Bulletin is Mr. Schumacher, of Daillens, Vaud.

In France, the ancient l'Apiculteur, now the oldest bee magazine in the world, is still published, but irregularly. Some other journals, such as "L'Abeille

Bourguignonne" and the "Revue Française d'Apiculture" appear as usual. An occasional German bee journal reaches us. In Russia also, the bee magazines are continuing in spite of difficulties. We have lately received from Tiflis, Transcaucasia, a publication describing the gray Caucasian bees as distinguished from the yellow bees of Erivan or Persian bees. The former are said to be much more hardy than the latter. A map in three colors attached to the pamphlet shows the spots, between the Black Sea and the Caspian Sea, in which the pure gray Caucasian bee exists, as well as the territory of the bee of Lenkoran and of the crosses between the two.

The Smoke-Distress Method

D. E. Lhommedieu writes: "In your smoked-in queen, you forgot to give the queen a puff or two as she goes in, page 135."

I gave on page 135 the latest directions, as given by Arthur C. Miller himself, Gleanings, page 108. Whether Mr. Miller thought that final puff unimportant, or whether it was omitted by oversight I do not know. At any rate it was a part of previous directions, and I thank Mr. Lohmmedieu for calling attention to it. C. C. M.

Illinois Beekeepers and the State Fair

The Executive Committee of the Illinois State Beekeepers' Association and the committee appointed to try to secure a special apiary building at the State Fair Grounds met at Peoria April 15. The members present were E. J. Baxter, president of the association, Dr. A. C. Baxter, of Springfield, Aaron Coppin, of Wenona, C. P. Dadant, of Hamilton, and A. L. Kildow, State Inspector of Apiaries. Messrs. Jas. A. Stone and C. Becker were absent.

Dr. Baxter reported to the committee his interview with the secretary of the State Fair as follows:

"The Agricultural Fair Management agree to give to the Apiary Department for 1916 all the ground floor of the northeast wing of the Dome Building, at the Fair. They assure the committee that it will not be difficult to secure a special building for bees and honey, for 1917, if a good exhibit is made in 1916. Up to this time, they say, only a limited exhibit has been made."

The date of the Fair is Sept. 15-23.

The committee decided that the State Beekeepers' Association should make an association exhibit, non-competing and educational, and that the beekeepers should be urged to contribute voluntary and educational exhibits aside from the personal and competing exhibits which may be entered by individuals.

The beekeepers of the State are also requested to send or bring combs of honey to be publicly used in running a honey extractor every day of the Fair, as was done the past season at the Minnesota State Fair. For further information on this address Dr. A. C. Baxter, 301 Leland Building, Springfield, Ill., who will have charge of this part of the display. Honey received in this way will be fully accounted for and the empty combs returned.

The committee recommends to the State Association at its next meeting to apply for a bee and honey building measuring 80x140 feet at the Fair Grounds. The suggestion is made that one long side of this building be next to a grove of trees or a row of shrubbery and arranged with an upper gallery to place hives of bees or nuclei, with an outlet for their flight under the eaves, the hives to be glass hives or nuclei for observation and display.

The committee voted to apply to the State Fair Management, for 1917, for a list of premiums amounting to at least as much as is allowed by the State of Minnesota, the amount of which is $1168. A sub-committee is to be appointed by Pres. Baxter for that purpose.

The American Bee Journal urges the beekeepers of Illinois to give their hearty support to the State Fair move, as the exhibit of honey and bees on a large scale will be sure to increase the demand for their product.

Wintering Bees by Specialists

A very interesting statement comes to us from the division of bee-culture of the Minnesota University. Reports received from 125 beekeepers show that those who keep 50 colonies or more have averaged only 5.3 percent of loss, while those who own less than 50 colonies have suffered a loss of 11.2 percent average. It indicates that specialists are more successful than average beekeepers. It also shows that many of the losses of wintering can be avoided by proper methods. As Instructor L. V. France puts it: "The necessity for the average beekeeper to take notice and secure the best information on proper wintering conditions is apparent."

A Suggestion to Writers

In current magazines we note the advertisement of a new book entitled "Cuban Cane Sugar," which is said to be "an authoritative new book by Robert Wiles, on Cuban cane sugar and its development as an industry."

There is a field which the honey producers should cultivate as well. There should be a good book on honey, not for beekeepers but for general readers and for a reference book. About the only information on honey to be found in the libraries is such meager mention as is to be found in the books on beekeeping.

We need an authoritative book on the subject which shall give only enough of beekeeping to inform the public as to how it is produced. Full information as to the extent and value of the industry should be included, as well as extended and reliable information about the sources of honey and its various uses and the value of bees in pollination, etc. The work should be published by one of the leading book publishing houses, to insure as wide a distribution as possible. If necessary to insure its appearance from such a well known publishing house, the beekeeping interests should guarantee a sufficient support to induce them to bring it out.

The material should be prepared in a popular form in the best literary style possible, in order to make it attractive to the patrons of the libraries. There are numerous hack writers who employ all their time in the preparation of popular articles for newspapers and magazines. Such writers would find it difficult, indeed, to get material enough concerning honey in the average library to fill a half column in a newspaper.

Australian Bee Farming

By the kindness of Mr. Geo. Nisbet, we have received an Australian Government pamphlet entitled, "Bee Farming." It may be a surprise to some American beekeepers to read the following passage:

"In some States there are practically no restrictions on the range of country over which beekeepers may farm. In others, bee farmers' leases, giving apiarists the right to farm over a mile or two of country, are to be obtained at the rate of one cent an acre.

"Victorian conditions make it necessary for a bee farmer on Crown lands to take out two licences, the one which gives him sole permission to use one acre of land as a site for his apiary, and the second—what is known as a bee-range—secures the exclusive use of the bee-flora to the holder over a radius of one mile. No other licence is allowed at a lesser distance than two miles. The first lease, that for the apiary site, costs $0.24 per acre per annum, and the second amounts to one cent an acre, or approximately $20.60 per annum. Equally liberal conditions are available in many of the other States."

No doubt a good many beekeepers in this country would be glad to pay a round sum to be assured that no one else would plant an apiary within two miles. Those Australians are up-to-date people. C. C. M.

A SHORT TRIP INTO TEXAS

The First of a Series of Articles By the Editor, Giving His Impressions of Texas Beekeeping

A SEVERE critic told me that a magazine devoted to bees is a technical journal, and that nothing in the way of travel experiences is proper in such a publication. But hundreds of readers appear to have enjoyed the account of my trip to Europe, which was surely anything but technical. Even some Europeans whose homes I visited seemed to delight in it. So I have concluded to follow a similar path and now give warning to the solemn lover of exclusively technical beekeeping discussions to stop right here and pass on to another article. Neither will I take it for granted that any of you have ever visited Texas, but will speak of it as if it were a newly discovered spot.

A cold Sunday morning, early in March, when the thermometer stood at 20 degrees, and Cooper Lake, in front of our home, still had a coat of ice 8 or 10 inches thick, wife and I took the train for San Antonio. Our tickets were bought by way of St. Louis and the Iron Mountain railroad.

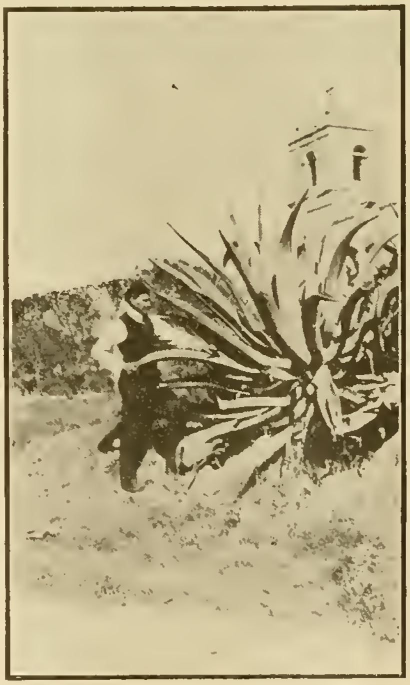
The ground was covered with snow, but we fully expected to see this white mantle disappear before we reached St. Louis, 180 miles south. We were disappointed. There was still more snow at St. Louis than at home, but the temperature was already milder. The next morning when we awoke, we were in Texas and much of the shrubbery along the tracks showed green buds, ready to come out in leaves. A few peach trees, around farm homes, were in full bloom. But we were yet far from the end of our journey. Texarkana, the last city in Arkansas, before reaching the Texas line, is just a little over half way between St. Louis and San Antonio.

Did you ever try to measure the State of Texas, as compared to other States of the Union? Placing them end to end, four such States could not find room, from east to west, on the map of the United States. Another State, of the same size, placed north of Texas, would reach into North Dakota. Since we were going into the south central part of the State, the reader can understand why we traveled in Texas from 6 a.m. to 8 p.m., on the "Sunshine Special." We crossed the Red river and understood its name. It is *red*, with emphasis.

We were going towards the sunshine, indeed, and soon found it out. The temperature slowly raised during the day, until at 2 p.m. the thermometer marked 90 degrees in the Pullman coach. Wife protested that if this were Texas winter temperature she wanted none of it. She proposed to return home as promptly as possible.

The nature of the landscape changes along the way. Hills change to plains. Brush and pines change to immense fields cultivated for corn and cotton. After passing Austin, the capital, we begin to see the cactus and the "chaparral," composed of scrubby live oak and dozens of sorts of shrubbery. I had already seen this, in a previous trip to Texas, but had not fully comprehended that such lands as these were the best honey-producing sections of Texas, for many of these shrubs are honey producers.

The weather was dry, the dust and the heat made the trip tiresome. But we nevertheless watched the landscape. Once in a while we saw an apiary, in the brush. We found that some people in Texas know how to advertise, for as the train sped along we read a sign, in large letters: "B. Robinson, Taylor, Tex., Honey for Sale," just in front of a fair-sized apiary. Good! That is the way to succeed.



A Maguey Plant (Century Plant)—Old Spanish Mission in the Distance

The sun at last went down, to our great relief, and the "Sunshine" reached San Antonio station at 8 p.m., where Mr. Le Stourgeon and his wife awaited us. Look at the cheerful face shown herewith and imagine how glad you would be to have the owner of it welcome you at the end of an 1100 mile trip. They accompanied us to our hotel, putting themselves at our command for the following day. But we needed rest and thought we would certainly have to get some summer clothes before we began our visits. This was Monday, and the first beekeepers' meeting was set for Thursday, at Pearsall, in Frio county. So we had ample time before us.

The night was pleasant, so was every night of our stay, as the Gulf breeze blows over the land. The next day was warm, but not as torrid as we had anticipated, from the previous day's experience, and we found our clothes very endurable. We became reconciled to the climate and cheerfully agreed to the continuation of our peregrinations. There was a very decided advantage to the climate. We both had left home with colds. They had entirely disappeared during that hot day's ride and did not come back. No wonder tourists come to San Antonio for lung troubles.

We expected to rest for an entire day. But we counted without our hosts. About 3 p.m., friend Le Stourgeon came with the president of the local beekeepers' association, Mr. Lewis Maverick, an active lawyer and extensive beekeeper, and invited us to ride in Mr. Maverick's auto. How to refuse? We accepted and visited the city, the parks, the barracks from which a few days later the soldiers were to start in search of the villain Villa. We visited an apiary and found that the brush, the chaparral, was thriving even within city limits. The mesquite (*Prosopis glandulosa*), a noted honey-producing tree looms up everywhere in the open land. The trees were just budding and promised abundant bloom. They are in appearance, at a distance, somewhat like an ill-kept fruit tree; that is, as long as the leaves are not on. Wife wondered why they did not plant their orchards in rows. They did look like ill-kept orchards, until we reached the real chaparral, which is a wilderness.

The mesquite is a dry season honey-producer. I was told by a number of apiarists, in different sections of Texas, that the driest years are the best for mesquite honey. Of course, there is a limit. When we were there, they had not had an honest rain for eight months and they needed one badly. The mesquite has two distinct blooming periods, one in March-April, the other in June-July. The reason why dry weather is favorable to honey-production from that tree is not far to seek. In wet weather it produces abundant stems and leaves and only a little bloom. In dry weather, like all suffering vegetation, it blooms abundantly.

Discussing this matter, Mr. Le Stourgeon said to me: "The provisions of Nature are wonderful and her mosaic fits together gracefully. I have always mentioned this trait of the mesquite shrub, when striving to point out her wonderful adaptations. In wet or even normal years, the rainfall produces grass, corn, weeds and foliage for the hungry fauna to feed upon, but when the drouth comes and the long arid summer stretches before them, the mesquite mesas spring into bloom and tons of the succulent and life-sustaining mesquite beans hang within easy reach

American Bee Journal

Sold
By
PURINA

OUR JOVIAL HOST E. G. LE STOURGEON, AND HIS AUTO USED FOR DELIVERIES AND OUTYARD BEEKEEPING

or fall upon the ground to "temper the wind."

The mesquite country does not extend more than 30 miles north of San Antonio and perhaps 60 miles east, but to the south it extends beyond the Rio Grande. The bees do well even within a mile of that pretty city of a hundred thousand. Why brush should be left to grow undisturbed close to a large city is explained by water shortage. It is a semi-arid climate and only where irrigation is easy can they depend upon bountiful farm crops. Cattle and bees may be kept and made to thrive with but little trouble comparatively. I then understood why so many bee associations exist within a few counties while many others have none.

Honey production is mainly "bulk comb honey" throughout Texas. I knew of it long ago, but did not know that it was so universal. Ten-frame hives, and half-story supers with frames filled with thin-surplus foundation are found everywhere. When the comb is filled and sealed, it is carefully cut to fit as closely as possible in tin pails or cans. The few vacant corners are then filled with extracted honey, of which enough is produced for that purpose. Sections of comb honey are rarely to be found, not because the beekeepers are unacquainted with the methods, but because they say that bulk honey sells best and pays best. To prove that they are well informed in progressive beekeeping it is only necessary to say that in all our trip we did not see a single box-hive. The Texas foulbrood law empowers the State Entomologist "to order any owner or possessor of bees dwelling in hives without movable frames, or not permitting of ready examination, to transfer such bees to a movable-frame hive within a specified time." The beekeepers of Texas seem to be of the opinion that this is right. In fact, this law was gotten up at their urgent request and they are looking after its enforcement. But more of this later, for we will soon meet the State Entomologist himself and we will look further into the matter.

The Texas crop of early honey appears to have been good. A friend sends us this item from Beeville:

"The drouth has been a severe blow to cattlemen and to farmers, but not so with the bee-men. Already two carloads of honey cans have been received here and they have gone like the proverbial hot cakes. Three more carloads have been ordered. Each carload has cans enough to put up 75,000 pounds of honey. The apiaries of this section are busy places now and we are glad the bee-men, at least, have profited by the drouth."

[To be continued.]

The Senses of the Honeybee

BY N. E. MC INDOO PH.D.,

(Bureau of Entomology, Washington, D. C.)

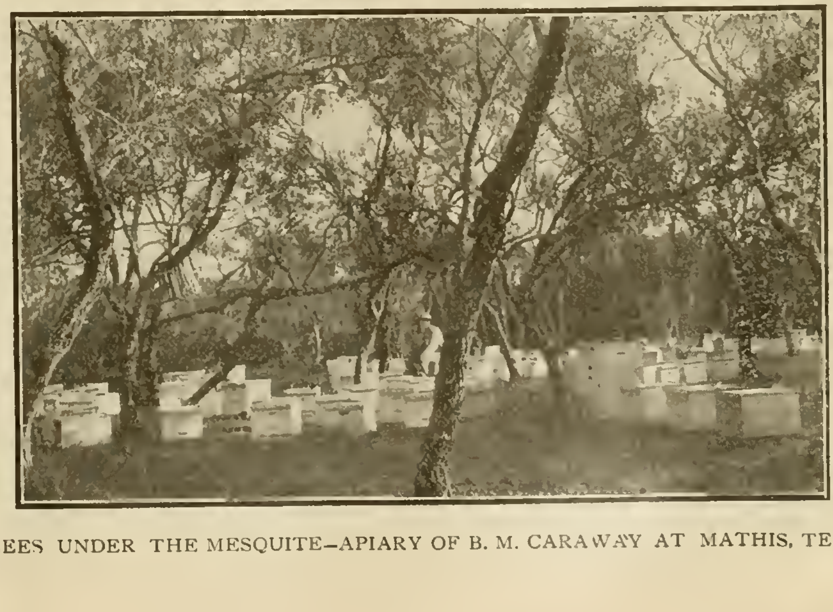
IN this Journal, June, 1914, pages 197-200, the writer gives an extract of his first bulletin on the senses of smell of the honeybee. A second bulletin pertaining to the same subject has recently been published in the Smithsonian Miscellaneous Collections, Vol. 65, No. 14. This bulletin, entitled, "The Sense Organs on the Mouthparts of the Honeybee," deals with the sense of smell, taste and touch. In order that beekeepers may better understand the various activities of their bees, the writer will briefly summarize the results in this second bulletin and then add a few remarks about the uses of the sense of smell and about the other senses in the honeybee.

Up to date the writer has found organs of smell on the legs, wings, sting, mandibles ("jaws"), tongue, labial palpi and maxillæ (appendages by the tongue), on the "throat," in the cavity leading to the mouth, on the sides of head, and a few at the extreme bases of the antennæ (feelers). As an average a drone has about 3000 of these organs; a worker about 2800, and a queen about 2200. Experiments showed that drones smell slightly better than workers and considerably better than queens.

Since drones have only one duty to perform, it would appear that their highly developed sense of smell is used primarily in mating, and as a queen is more or less an egg-laying machine, such an acute sense of smell is not needed, and compared with that of a worker, it seems that her ability to smell is somewhat degenerated.

In the higher animals the senses of smell and taste are not sharply separated, and in the honeybee it will be shown that these two senses are not separated at all. For this reason the honeybee possesses a combined sense of smell and taste. The mouth-parts cannot be removed, nor can they be covered with any sticky substance without making the bees abnormal while eating; therefore, such operations are useless in trying to find out how bees distinguish differences between foods. On account of the abnormal conditions resulting from any kind of an operation, it was decided to find out whether bees have likes and dislikes in regard to foods and to make a careful study of all the sense organs on and near the mouth-parts.

In determining the first point more



BEES UNDER THE MESQUITE—APIARY OF B. M. CARAWAY AT MATHIS, TEX.

than 5500 bees were used in their normal state. Foods fed to them contained repellents and those having the four attributes of human taste: sweet, bitter, sour, and salty. The following substances are the most important ones used: carbolic acid, oil of peppermint, whiskey, various acids, formaldehyde, kerosene, lime-sulphur, seven different kinds of sugars, quinine, strychnine, lemon juice, and 11 different salts, including our common table salt. Some of these substances were mixed with honey, others were mixed with cane-sugar, while the various sugars were made into candies. Cane-sugar candy, three varieties of honey, sugar syrup honey and pollen mixed, and honey and sugar mixed, not containing any of the above substances, were also fed to bees.

It was found that bees generally avoid foods containing repellents unless they are forced to eat them when the pure foods are removed. In such cases the bees show preferences between the foods containing the various repellents. They are fond of their favorite food flavored with whiskey, but they do not like it as well as pure honey.

Bees show decided preferences between candies made of various sugars. They cannot be forced to eat saccharine (a sugar 500 times as sweet as cane sugar) candy, but greedily eat manose (a simple sugar) candy which kills them as quickly as strychnine. They are particularly fond of cane-sugar, levulose (fruit sugar) and maltose (malt sugar) candies, but care little for dextrine (a starch gum and not a sugar) and lactose (milk sugar) candies. They care little for raffinose (a sugar from a certain Australian eucalyptus plant) candy when they have the preference of cane-sugar, levulose or maltose candy, but much prefer it to dextrose (grape sugar) candy. Bees can be forced to eat any of these candies, except saccharine, when no other food is present, but these experiments were not aimed to determine what candies agree with them best. Of these candies, they like cane-sugar candy best, although levulose candy is a close second.

The bees liked fresh basswood honey much better than an old dark-colored honey given to them. The source of the latter honey was unknown. It was taken in the crystallized form from old combs and was then melted. They care little for either sugar syrup (half and half), or for basswood honey and pollen (4 parts honey to 1 part pollen), or for basswood honey and sugar (half and half) when they are given pure basswood honey at the same time.

In these experiments bees also showed marked preferences between foods containing bitter and sour substances and between the foods containing the various salts. They could scarcely be forced to eat chinquapin honey, and in a few instances showed decided preferences between certain foods while the writer could detect only little or no differences between the same foods.

The preceding results clearly demonstrate that bees have likes and dislikes in regard to foods and can discriminate between some foods better than we can. As a general rule, foods agreeable to us are also agreeable to bees, but there are a few marked exceptions. Substitutes for honey as food for bees may be better than honey in a few instances, but these investigations show that no substitute can be had which will be liked by them as well as the best pure honey.

That bees must first eat more or less of the foods before being able to discriminate differences between them, unless they contain repellents, indicates that bees have a sense of taste, provided this discrimination is not accomplished by means of the sense of smell. This point was decided after making a study of all the sense organs on and near the mouth-parts. Only two types of sense organs were found. The organs of smell, already briefly discussed, make up the first type. These cannot be used as taste organs because they rarely, and perhaps never, come in contact with the liquid food being eaten. Sense hairs form the second type. These also cannot serve as taste organs because the liquid foods cannot pass through their walls in order to stimulate the nerves attached to them.

Since bees are covered with a hard outside coat, they cannot feel weak pressures, and for this reason certain hairs have become connected with nerves. Nearly all the hairs on the mouth-parts are connected with nerves. The tongue is quite sensitive to touch, because it has about 85 sense hairs, which lie among the dead hairs so easily seen on this appendage. These long hairs are not true hairs and are not connected with nerves. The mandibles or "jaws" are literally covered with sense hairs and organs of smell. These hairs are irregularly scattered, except there is a curved row at the tip of each mandible on the outer side. The hairs in this row curve slightly over the edge of the mandible toward the biting surface or inner side. These hairs may be roughly compared to the fingers at the tips of the trunks of elephants, although they are certainly many, many times as sensitive. In fact, the tips of the most sensitive human fingers imaginable cannot be compared in sensitiveness to the mouth-parts of a worker-bee. Such a keen sense of touch easily explains how workers can handle the eggs and larvæ without injuring them, and why they are able to mold the walls of their cells of a uniform thickness. The sense hairs of the mouth-parts and also those on the antennæ enable the bees to communicate with each other merely by touch.

There are a few sense hairs in the cavity leading to the mouth, and the fleshy three-lobed "tongue" hanging in front of the mouth bears two large groups of sense hairs. In the mouth, just in front of the pharynx, there are two more large groups of sense hairs.

All over the head, on the throat, on the legs and even on the body of the bee, there are sense hairs so located that it is impossible for a person to touch a bee without touching some of these hairs.

We are now ready to explain how bees eat solid and liquid foods. By means of sense hairs on the mandibles, these appendages can separate the pollen or bee-bread into pieces small enough to be swallowed. These pieces are then dropped upon the extreme base of the tongue which resembles a small crane in that it may be moved up and down, backward and forward and from side to side. The upward movement carries the pollen to the mouth, where it is pushed into the mouth by means of the fleshy "tongue" covered with sense hairs already mentioned. Should a piece of pollen be too large to pass through the esophagus, it could not pass between the two groups of sense hairs just in front of the pharynx without touching them. In such a case these hairs would cause the muscles attached to the sides of the mouth to contract whereby the pollen would be thrown to the exterior. It is thus seen that these sense hairs serve as a safety device to prevent the bee from swallowing pieces of solid food too large to pass through the esophagus.

When a bee smells food it at once extends its tongue and touches the food. The sense hairs at the tip of the tongue inform the bee as to whether the food is liquid or solid. If liquid, it is immediately eaten. But suppose it is candy containing an undesirable substance which the bee cannot detect until the candy is dissolved. At once a small current of saliva passes through the canal in the center of the tongue to the tip of this appendage. As soon as the saliva mixes with the food, a chemical or physical change is brought about, and this change perhaps liberates odors that were not smelled by the bee before the food was eaten. The dissolved food now passes through the deep groove on the underside of the tongue merely by capillary attraction. Since the organs of smell on the mouth-parts are almost in contact with this food as it passes from the underside to the upper side around the base of the tongue, the faintest odor imaginable from the undesirable substance could be detected by these organs.

This is why the writer claims that the bee has a combined sense of smell and taste, although it is easily seen that the sense of taste really plays no part in the reactions shown by bees while eating. To us sometimes a food, before being eaten, emits only a faint odor or no odor at all; but when we eat it, we perceive a pronounced odor. In such a case the odorous particles are not given off until the food is taken into the mouth and mixed with saliva. The same principle is certainly applicable when bees eat candies which contain undesirable substances emitting extremely weak odors. The liquid food now lying on the upper side of the tongue is raised to the mouth opening where it is sucked into the mouth by means of the pharynx acting as a powerful pump. The pharynx is able to do this because it is supplied with several large muscles.

The preceding closes the summary of the writer's published bulletins pertaining to the senses of smell, taste and touch. Since the writer is no longer connected with the office of bee-culture and perhaps will never study the senses of the honeybee any more, a few remarks about the uses of the sense of smell and about the other senses of this insect may not be out of place here.

Washington, D. C.

[Concluded in July number.]

Beekeeping in Chile

BY M. C. RICHTER.

[Continued from May.]

CHOOSING a location in Chile is very much like choosing one in California. This is due to the similarity of both the honey-plants and the climate, the only difference being that the seasons are the reverse.

The writer, after examining bee territory over a large area, finally decided to locate in the Melipilla Valley at a point about 40 miles from Santiago. The location was half way between the foothills of the coast range and the river that flows through the valley. It was expected that here the bees would breed up in the spring on the mustard and wild radish of the pasture lands. which would put them in fine shape for the foothill bloom from vuillai and corontilla. Then, in summer, the bees could work chiefly on alfalfa and white clover. In the fall there would be considerable peppermint along the river that might yield a surplus. Altogether, under California conditions, it looked very much like a 300 colony location.

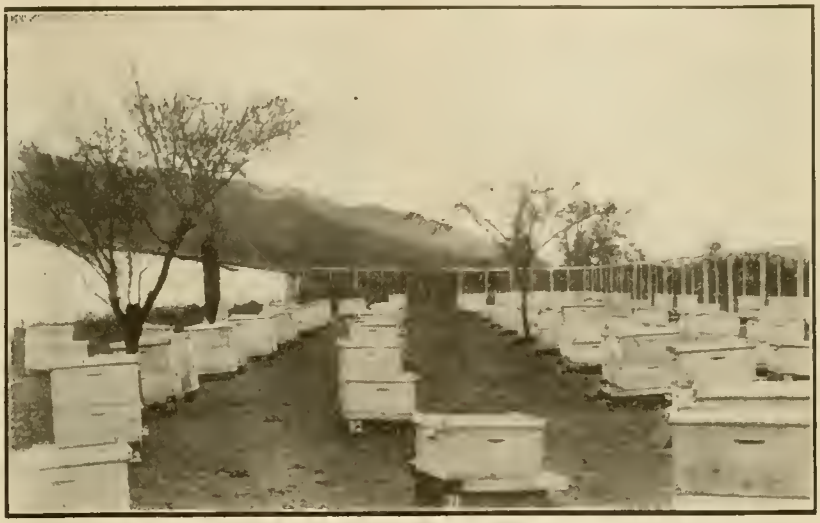


FIG. 2.—ANOTHER VIEW OF SAN ANTONIO, FACING THE SAME DIRECTION BUT SHOWING WESTERN PORTION OF THE APIARY—(Note hanging swarm.)

THE CHILIAN BEE.

The location was there, to be sure, but how about the bees? As stated in the previous article, the bees are descended from two colonies out of 25 that were brought from Italy 70 years ago. The conditions following their introduction were most adverse. Wintering, for instance, was passed in hives having the equivalent in comb area of but six or seven Langstroth frames. Instead of having 30 or 40 pounds of honey as winter stores, they had perhaps less than 10. A winter loss of nearly 50 percent was the result. Furthermore, the swarming during this period was incessant, due principally to the very cramped condition of the colony. For the queen, after filling the equivalent of, say three Langstroth frames of worker-comb and two of drone, was soon compelled to leave with a swarm. Moreover, second and third swarms were nearly as frequent as prime swarms.

What was the effect then of these 70 years of severe treatment upon this Italian strain of bees? Had they degenerated? Would they swarm to such an extent that it would be most difficult to handle them along practical lines?

With these thoughts in mind, the writer, in the spring of 1912, secured an old fashioned Chilian apiary. The fall before it numbered 127 colonies, but now it had dwindled to 84. These were transferred to Langstroth hives and increased to 200. This apiary was called San Antonio (Figs. I and II). Later in the season a nearby apiary of 100 colonies was added, making 300 colonies in Langstroth frames.

Accurate records were kept of the 84 colonies transferred. After the summer's honey crop was harvested, six of these colonies were selected as possible breeders. There had been extracted from these six an average of 214 pounds of honey, and during the entire month of December their brood-nests contained 10 solid frames of brood. The one colony that was finally selected to breed from had maintained a 10-frame brood-nest from Nov. 18 to Jan. 15, and on Dec. 8 had as many as 14 frames of brood. This colony did not swarm, and, in addition to drawing out 27 sheets of foundation, produced 220 pounds of honey.

It is believed that the queen ancestors of this colony, for the 70 years past, did not have room during the height of the breeding season, to lay even half the eggs that this queen did.

The Italian bees of Chile have had a hard struggle for existence. In consequence, those that survive today possess great vigor and hardiness, perhaps to a greater degree than many of the so-called modern apiaries in the United States.

But the reader must not imagine that a Chilian apiary, transferred to movable frame hives, within one or two years can be made equal to an apiary of properly bred bees in this or any other country. There was but little uniformity in the production of the colonies of this apiary. It will take years of proper application of scientific breeding to overcome this. But "new blood" is not necessary. The above mentioned breeding colony, during her second and third seasons, maintained her position amongst the "first ten" of the 300 colonies in the apiary.

The Chilian strain of the Italian bee would be known in America as "leather colored." Bees from various parts of Chile were examined, and in every instance the workers were of uniform markings. The queens were, perhaps slightly more uniform than our leather colored. The drones, on the other hand, were not at all uniform. They were leather colored, or showed graduations from leather to black, as we find them in some of our colonies that we term pure Italians.

In disposition the Chilian bee is very mild. It is not at all necessary, even in large apiaries, to wear a veil before extracting time.

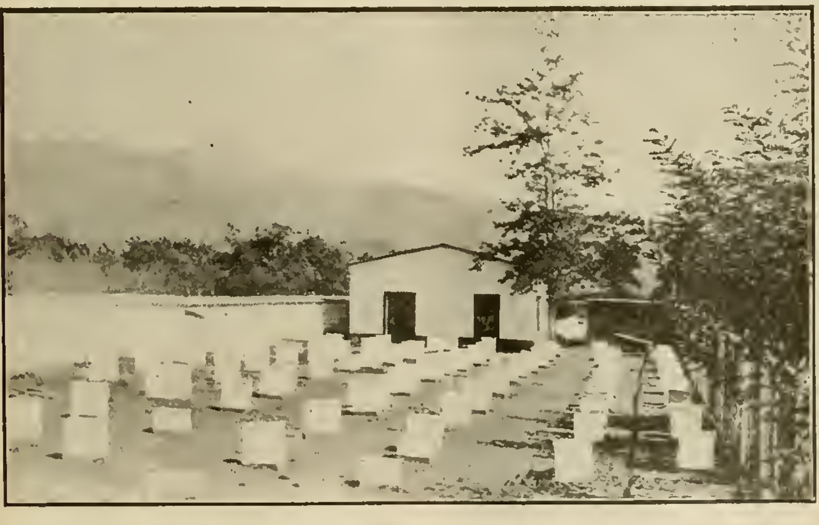


FIG. 1.—APIARY SAN ANTONIO FACING WEST, AND SHOWING 150 COLONIES ON THE EAST SIDE OF THE BUILDINGS

SWARMING.

In apiary San Antonio the first season there were 49 swarms, the second, a poor season, only 8. This indicated that after all swarming was perhaps not a serious problem. Such, however,

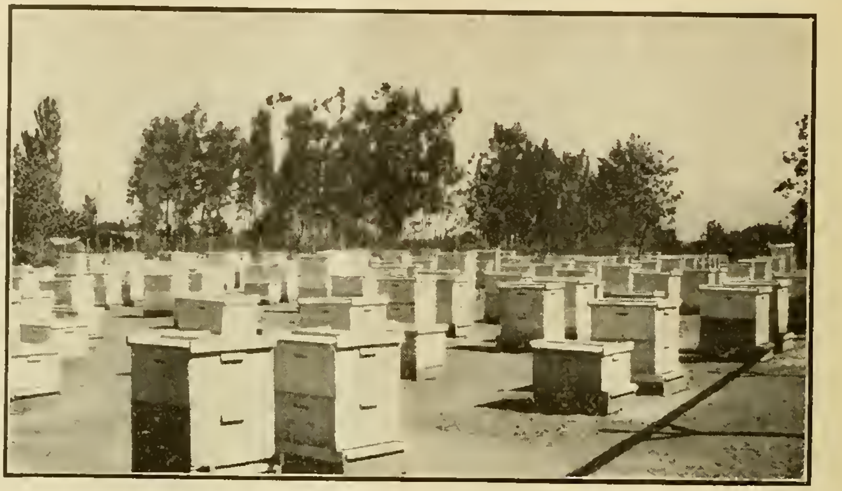


FIG. 4.—APIARY MARRUECOS CONTAINING 300 COLONIES ON CONCRETE BASIS BUT WITHOUT THEIR WIRE-SCREEEN ALIGHTING "BOARDS"

was not the case, for the third season showed a total of 140 swarms. On Oct. 9, for instance, 14 swarms issued, and from the 13th to the 18th of the same month five swarms issued daily. This was during foggy and drizzling weather. Strange to relate it was fully two months later before the main honey flow started; then 19 more swarms issued.

LABOR.

The farm laborer in Chile receives in wages from 15 to 25 cents a day, according to the fluctuations in the rate of Chilian exchange. The laborer must board and house himself. The working day consists of 12 hours. In return, however, he receives from two to four acres of land to dwell upon.

What, then, was the necessity for a power extractor, when 20 cents would revolve the baskets for 12 hours. It is also no expense to keep the weeds down, in and about the apiary.

Felix Soto (Fig. III), the writer's best bee hand, learned beekeeping at 20 cents a day. This salary soon received a substantial raise. When Felix could stock nuclei, introduce queens, etc., he felt quite proud of being a 30-cent man. Today he has full charge of apiary San Antonio, and there is every reason to believe that he is succeeding. Apiary Marruecos (Fig. IV) another apiary of 300 colonies is now handled by a Japanese, A. Hatae, who is a very careful and thorough student of apiculture.

Although some of this cheap labor is good, there is a great deal that is bad. Most of the help cannot be trusted. The writer soon found that two good sized padlocks, one on either end of his solar wax extractor, were the only means of protection. In apiary San Antonio there were no less than 11 locks and keys necessary. With all these precautions, however, the writer was caught napping. One night he left just outside the extracting house a super full of dry brood combs, thinking that nothing in the world would disturb them before morning (no wax moths). A hungry dog, however, had in some manner broken through the fence surrounding the apiary and had eaten every bit of pollen in the combs!

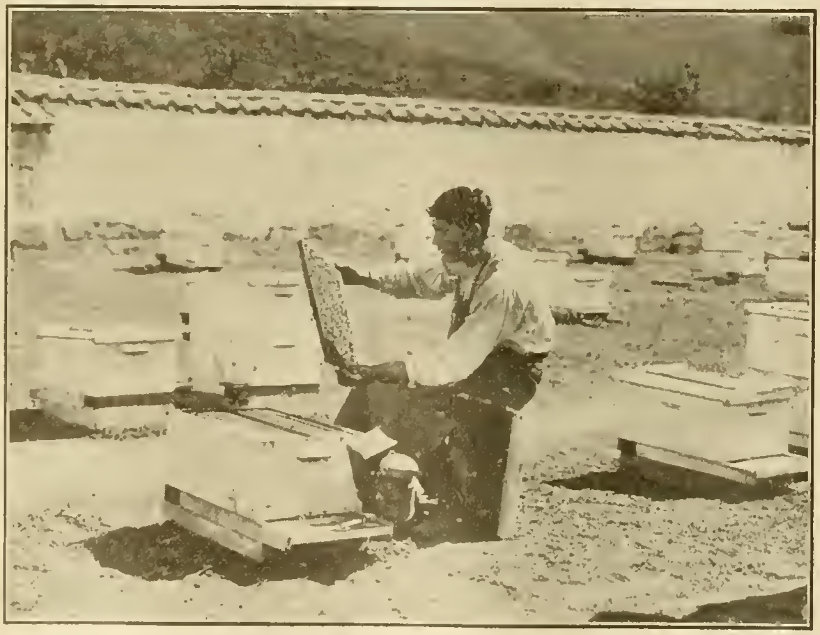


FIG. 3.—CHILIAN BEE HAND INSPECTING A COLONY OF BEES

TRANSPORTATION DIFFICULTIES.

It frequently happens that the railroads in Chile lose considerable freight through theft. Honey is no exception in this respect. Of late it is transported largely in sealed cars. There is a case on record where a car of honey arrived at its destination with seal unbroken and some of the honey gone; that is, several of the barrels were empty. The cause of this shortage was soon detected. Evidently while the car was stalled in transit along some siding an enterprising Chilian, crawling beneath the car, with a good sized brace and bit, soon established direct communication between the bottom of a honey barrel and a receptacle previously provided. Doubtless this clever scamp had several accomplices, each of which was similarly equipped.

San Francisco, Calif.

Get Ready for the Honey Flow

BY F. GREINER.

THERE is no better place for a beekeepers' meeting than the workshop of an extensive honey producer, though such a meeting might not be attended by any more than three or four interested persons. I would suggest that such meetings be arranged for by the beekeepers all over our land, and if possible frequently; they will be found very profitable at any time of the year. This by way of introduction of what I wish to say on the subject of "Preparedness." The reader need not fear that I will say anything on building battleships or increasing our standing army or anything of the sort. It is only along the line of getting ready for the 1916 campaign from the honey-producers' standpoint.

There were quite a few beekeepers last season who were caught with no dishes ready to catch the honey when the downpour came. Supers had to be emptied and refilled with sections. Comb foundation as well as sections had to be ordered hastily and shipped by express; same with receptacles for extracted honey. One of my neighbors, I observed, is sawing out and nailing up a lot of wide frame section holders just now. He has also a liberal supply of sections on hand, and has ordered sufficient comb foundation not to be caught again. Another friend was getting his supers ready, filling the sections with sheets of comb foundation. He had gotten along pretty well with his work.

We can never tell before hand how the honey season may turn out, and to be on the safe side we should always be well supplied with all and everything that can possibly be needed. Many do not order or supply themselves with shipping cases for comb honey or glass packages for the extracted until the crop is secured; but even this is not the best way. Such things do not deeriorate if they have to be held over. Do not wait until the rush is on before you order a supply. But a short time ago I offered a near-by beekeeper his supply of sections at the price I paid, taking 25,000, but he refused, saying he would wait until he saw the need. If I have to hold his sections until then, of course, he will have to pay 20 percent more for the goods. It will be to my advantage and I ought not to find fault. As to the real work now of getting hives and supers ready a few suggestions might not come amiss.

Brood-frames, shall we wire them? If so, how? I find that the deeper the frame the more necessary it is to strengthen the comb foundation to keep it from sagging. The painting of the upper portion of the foundation will probably solve the problem in the cheapest way. One or two horizonal wires for the Langstroth frame would help to keep the comb where it belongs. It would not in itself prevent sagging. Even four horizontal wires do not accomplish this end, even if put in ever so tightly stretched. In fact, a better comb will result when the wire is rather slack; when taut, buckling between the wires very often results. I am using a comb of 4¼ inches of depth; here no sagging occurs with medium weight brood foundation, but I consider a horizontal wire of advantage, even then, in order to hold the foundation in the center of the frame. When frames are spaced 1⅜ inches or less from center to center it is much more necessary to have the foundation in the center of the frame than when the spacing is more, one or two wires will be sufficient to hold the foundation in the Langstroth frame where it belongs.

With 1½ inch spacing there is little more beeway, and we may be a little more careless, we may dispense with the wires and even use the loose hanging frame. To prevent sagging in deep frames, perpendicular wiring will do, as Dr. Miller's splints also. That kind of wiring will demand a stiff bottom-bar.

I prefer a flat top-bar with no groove. When a frame has to be used the second time the groove is a drawback.

We are now cleaning up our supers, scraping the section-holders and separators, the supers themselves, the inside and the edges. A great deal of propolis intermingled with particles of wax, which should be secured, is the result of this scraping. Different beekeepers use different tools for this work. I observed a friend the other day using an uncapping knife, the tip end (⅓) of the blade being broken off. He said it worked nicely. A piece of steel 2½x6 inches, from a broken cross-cut saw serves my purpose well. I keep the edges filed square.

When all our supers and frames are cleaned we proceed and make up the sections and fill with full sheets of comb foundation. I have been looking around for some time to see if there was not a better method to do this work than my way of doing it, but nothing has impressed me very much so far. I do not use a machine for folding. I have never seen the need of one, as it does not facilitate the work. In fact, but little time can be gained at best by the use of a machine for that purpose. I easily fold 1000 per hour by just using my hands folding the sections into a square corner improvised by a piece of scantling clamped against the work-bench projecting above the bench the height of section when folded. The dovetailed ends are pushed together with the hands. I demonstrated the operation before a small gathering of beekeepers a few days ago to their entire satisfaction.

What shall be the shape and size of the comb foundation starters? I have to admit that I have no experience with the split section, which may be managed in such a manner as to avoid all the cutting of the foundation into little sheets. In other words, we may insert a long strip of the material into the four sections of the holder at one operation, and we need not use any artificial means to stick it (the foundation) fast to the wood. The pressure of the sections when clamped together in the super holds it and makes a most perfect job, I suppose.

However, this style of sections has not met with favor generally, and is therefore not much used. I have been obliged to cut the foundation into sheets to fit the sections, and then fasten these little sheets in with some sort of a machine like the Daisy, or an improvement on this. I have not found it practical to use sheets of foundation to exactly fill or fit the section. There must be a little space left at the sides as well as at the bottom. At the bottom in particular there will have to be a space of ¼ or ⅜ inch. The same space must be left, when bottom starters are used, between that and the sheet of foundation above it. Extra light section foundation is apt to sag more or less, and therefore allowance has to be made.

I am not sure that it would do very much harm if the sheet of foundation exactly fitted the section laterally, but it seems a little room is necessary to make the fastening by the Daisy or similarly working machines practical. It *is* practical to fasten sheets of foundation into sections by the hot wax method, using a pencil brush. In fact, this method most securely fastens the sheets, and none ever drop off while handling or transporting ready supers to the outyards; in this case sheets may be cut to exactly fit the sections laterally; but the method is slower and not popular with the majority of honey producers. I have concluded that it is most profitable to use as much comb foundation in sections as possible, although I took the opposite stand at one time.

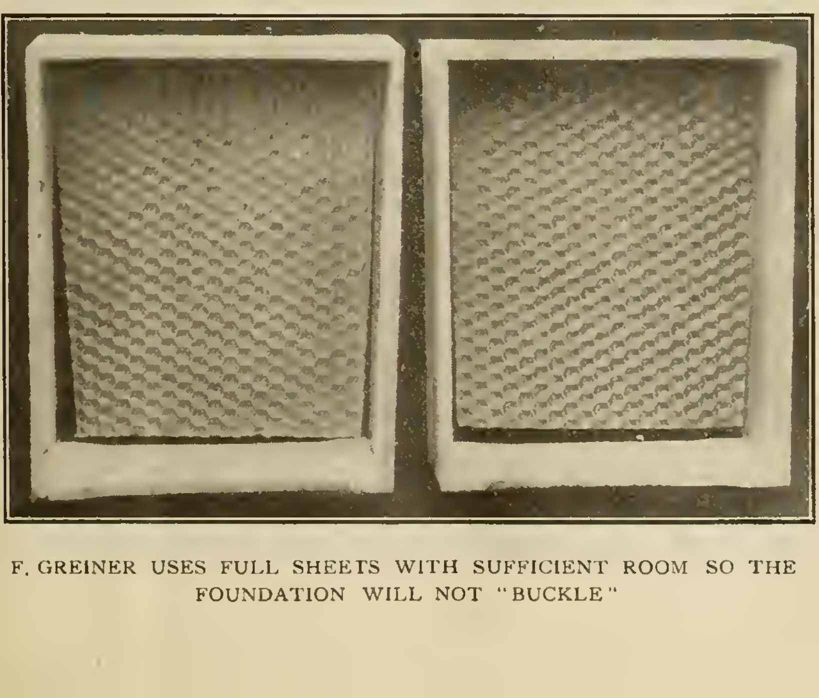
As said above, I want the sheets of foundation for my 4x5 sections in height ¼ to ⅜ inch less than the inside dimensions of the section, which would be between 4¾ and 4½ inches. In width I would have the sheet just 3¾ inches wide at top and 3¼ or 3⅜ wide at bottom. I have used them thus for years with good results. The bottom starter is not needed, and is of advantage only with the first supers when the bees occasionally begin their work here.

The sheets of foundation may very easily be cut the desired shape with almost no waste in a properly arranged cutting box, cutting 12 to 15 sheets at a time. The foundation should not be too warm when this work is done. I have worked in the cellar at times when the temperature was high outside. I also often do the work of handling the foundation and fastening the sheets into sections during the early morning hours in the summer time.

There are some who do not deem it best to put foundation into sections until wanted for use. I have not discovered that it makes any difference whether this is done just so or not. The principal thing is to have the supers ready when needed. The same rule is true when running for extracted honey; have all extracting supers ready and have plenty of them.

I find worker-comb in the extracting supers is more profitable and satisfactory than drone-comb.

Naples, N. Y.



F. GREINER USES FULL SHEETS WITH SUFFICIENT ROOM SO THE FOUNDATION WILL NOT "BUCKLE"

No. 17.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(Photographs by the author.)

DURING the uncertain and backward spring which has just passed, the writer has taken a great deal of interest in trying to determine the value of the spring wild flowers to the honeybees. Aside from references to fruit-bloom, dandelion and the forest trees, such as maple and willow, the author has been able to find few statements of value in determining the importance of the spring blossoms. This season in our section the days when the bees could go to the field for forage have been few and far between. Brood rearing started early, and as a result many colonies were on short rations, and many died from starvation where their owners did not take the trouble to insure sufficient stores. When they could get out they made the most of everything in sight, and the fact that bees were to be seen eagerly seeking the blossoms did not in itself establish the fact that they were getting much help from any particular plant.

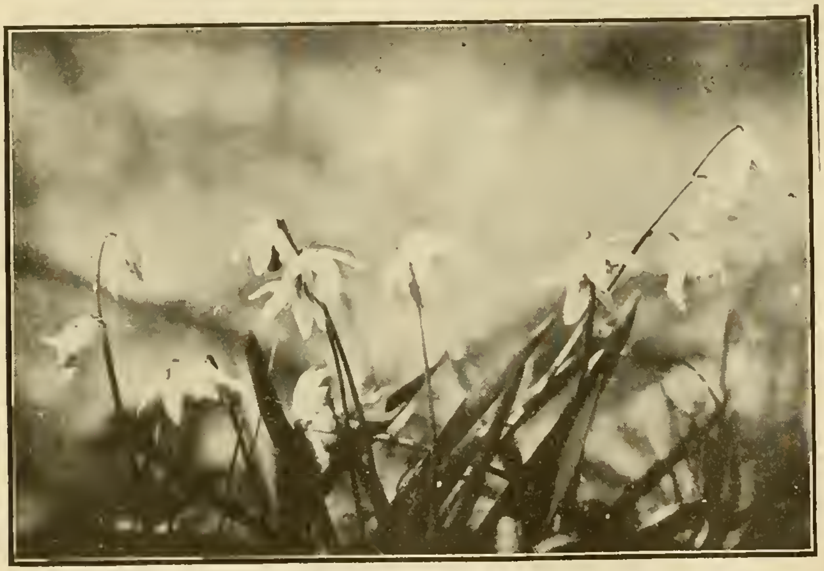


FIG. 77.—BLOSSOM OF THESIBERIAN SQUILL

At one time when a hive was opened there was considerable thin nectar which had evidently just been brought in. Yet as far as could be ascertained there was nothing available except the wild flower blossoms. Maple and willow had passed their blooming period with the weather so unfavorable that the bees could not fly. Box-elder or fruit blossoms had not yet opened. Possibly there was something within reach which the writer overlooked, but the indications were decidedly to the effect that the bees were finding these spring blossoms of much help in tiding them over an unfavorable period.

The photographs with this article were taken in the field, with one exception. A camera was carried along and notes taken on the blossoms which the bees were visiting and the picture made where the flower grew. While it is not possible to get as satisfactory pictures in some respects in this way, as where the flowers are taken to the laboratory, there is an advantage in getting a picture of the plant in its natural environment.

In western Iowa the first wild flower to appear is a small white trillium, commonly called "wakerobin." During its period of bloom there were few times when the bees could go afield, but when they did go they sought these flowers eagerly. It was impossible to determine with any degree of success whether or not they were getting nectar. Since these spring flowers can never be of importance aside from the assistance they give the bees in early brood-rearing, and as pollen is as valuable at that period as is nectar, the matter is not important. No photograph was secured suitable for reproduction as conditions were not favorable.

GARDEN FLOWERS.

In cities and towns such introduced species as crocus, scillas, etc., take the place of the wild flowers. The bees sought the blossoms of the Siberian squill, *Scilla siberica*, very eagerly and appeared to get some nectar although as with the others the matter was not definitely determined. This is an Old World flower which is very attractive when naturalized in the grass of parks or lawns. The blossoms are blue and appear some time in advance of the fruit trees. Figure 77 shows the blossoms about half natural size. Flower lovers will find this a very desirable plant to grow by hundreds or thousands. Aside from planting the bulbs it requires no care and it blooms in spring before time to mow the lawn, and the plant has died down again before it is necessary to clip the grass closely. It not only thrives without care in a stiff sod of a well-kept lawn, but adds a touch of beauty at a season when there is little enough that is attractive to be seen.

The crocus blossoms were out at the same time as the squill. This plant is a native of the Mediterranean region of Europe, but is widely cultivated in this country for its attractive flowers which range from white to purple in color. Figure 78 shows a honeybee searching for some honey treasure in a crocus blossom.

THE BLOODROOT.

The bloodroot, *Sanguinaria canadensis*, is a common wild flower in the moist woods of all our northern States. It blooms early in April, and is eagerly sought by the bees for pollen. The plant is shown at Fig. 79.

SPRING BEAUTY.

Figure 80 shows a bee gathering pollen from a blossom of spring beauty. These little flowers grow abundantly in the woods from Nova Scotia to Sas-

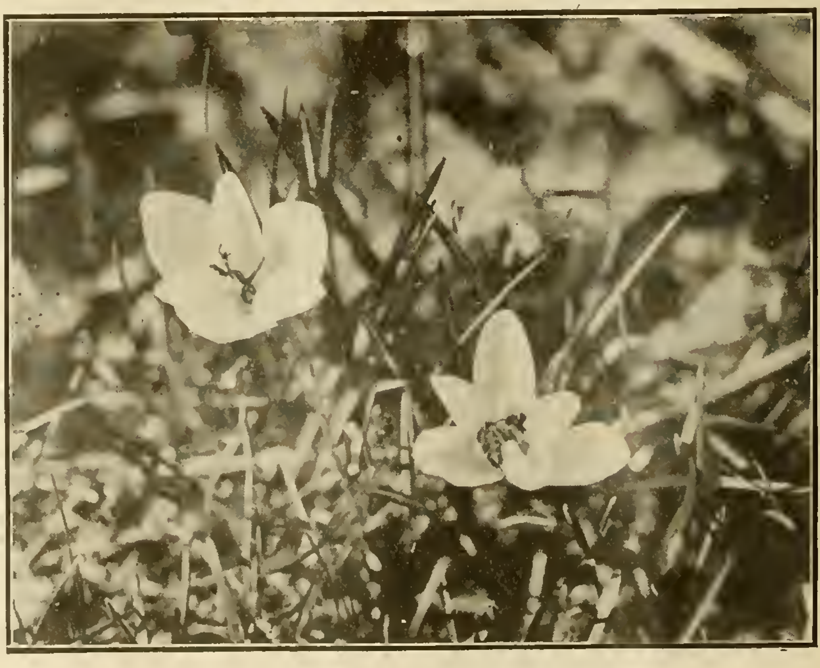


FIG. 78.—BEE VISITING A CROCUS BLOSSOM—THE CROCUS IS ONE OF THE FIRST FLOWERS TO BLOOM IN SPRING

katchewan and Alaska, and southward to Georgia and Alabama. *Claytonia virginica* is one of the most widely scattered of American wild flowers and may be expected in woodlands almost anywhere except the extreme southern States. The bees have sought it very eagerly on the few days when they could fly during its early period of bloom. It was just at its best when fruit bloom opened and there was better pasturage to be had. All the bees which the writer observed at work on this plant seemed to be gathering pollen only.

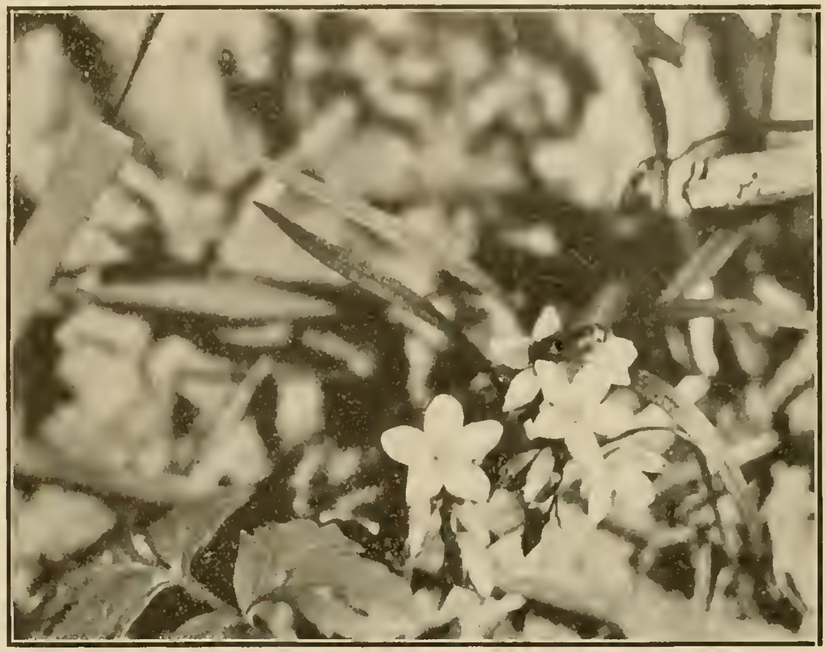


FIG. 80.—BEE GATHERING POLLEN FROM SPRING BEAUTIES

VIRGINIA WATERLEAF.

The Virginia waterleaf, *Hydrophyllum virginicum*, does not bloom until after the fruit blossoms are gone and so has less competition for attention than some other plants that come into bloom during the same period. It blooms abundantly and grows luxuriantly in moist woods. The bees have been so eager for the blossoms of this plant in the writer's wild garden and in the surrounding woods for several years past, that he has come to regard it as quite a valuable honey-plant, although nowhere so listed as far as can be learned. Figure 81 shows the blossom and leaf of this plant while Fig. 82 shows masses of the plants in bloom. Apiaries in the vicinity of woodlands should find this plant of considerable value, judging from the writer's limited observation.

Atlantic, Iowa.

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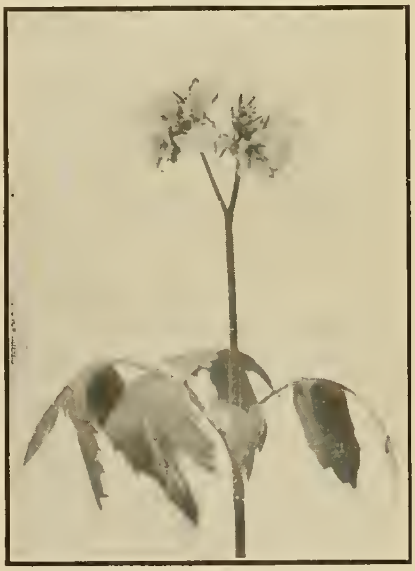


FIG. 81.—BLOSSOM OF VIRGINIA WATERLEAF

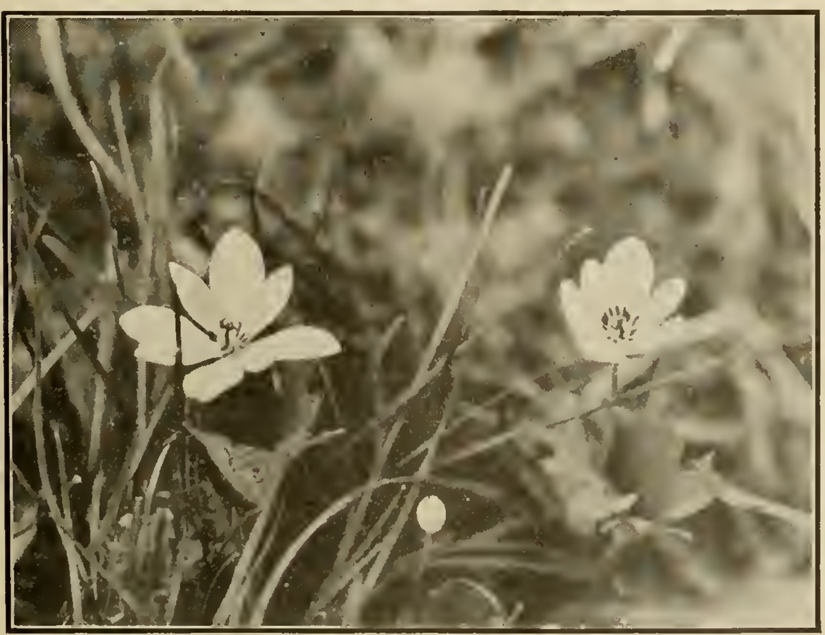


FIG. 79.—THE BLOODROOT BLOOMS EARLY WHEN BOTH NECTAR AND POLLEN ARE SCARCE

European Foulbrood

LETTER BY W. S. PANGBURN TO DR. MILLER.

DEAR DR. MILLER:—The method you used in treating European foulbrood in those two colonies in your article on "Foulbrood at Dr. Miller's," in American Bee Journal (raising the brood-nest and putting the queen below on clean combs), was a failure with me with but few exceptions.

Did you ever try that again? If so, what success? I had no confidence in it from the very nature of the treatment, and it is the first thing I ever questioned from you. I have had the best success in caging the queen for 10 days and then give a clean set of combs and raise the old brood-nest and use it for extracting. Of course, every one would not have the combs, but I think it safer to take away the old brood-nest whenever possible. *It seems* there is no European foulbrood after these combs are filled with honey and extracted, at least I have found it so. I have also found diseased combs can be put on top of clean colonies provided there is no larvæ in them to feed *a queen-excluder and a clean body between the brood-nest and diseased body*, get them cleaned up, filled with honey, and not transmit the disease below.

I have yet to find one single instance where I thought the queen was to blame for the disease, and I have done all I could to bring this about. Until I am shown differently I will retain the idea that in the vast majority of cases the nurse bees are to blame for the spread of the disease. I have some proof for this last statement that I will not explain here. I may be wrong, however; *I have been before.*

European foulbrood cost me something last summer because my bees were getting the disease from other sources faster than I could get rid of it, but I would not take a considerable sum for what I have learned.

Center Junction, Iowa.

DR. MILLER'S ANSWER.

Your experiences are interesting. I do not remember that I tried again putting the diseased brood over excluder, leaving queen below.

You think it safer, in addition to caging the queen for 10 days, to give her clean combs, putting the old combs above an excluder. Undoubtedly. Yet those of us who do no extracting cannot take advantage of that plan. However, the proportion of failures with merely caging the queen is so small that it cannot make such a very great difference.

You also found diseased combs with no unsealed larvæ, put two stories above a healthy brood-nest, did no harm. Yet I suspect if you followed that up long enough you would now and then find an exception. For the spores are in that upper story, and while there is little probability that now and then one of those spores will be carried down and fed to a larva, the fact is that so long as there are any spores in any of the combs of a colony, no matter how far removed from the brood-nest, there is always a chance of infection. Indeed, we may go a good deal further than that. Take an apiary in which European foulbrood has been, and suppose it has been so cleaned up that not a spore can be found in any comb, hive, or super in the apiary, and that there is not a diseased colony within a thousand miles, yet there is a chance that the disease may break out at any time. For in cleaning up, the bees have carried out millions of spores, and they are scattered all over the ground in all directions about the apiary. There is a chance that one of those spores may become attached to the foot of a bee that lights on the ground, to be carried into the hive and by some means get into the breakfast of a baby bee, and there you are with European foulbrood on your hands again. There may be not one chance in a million, but all the same the chance is there.

Let us return to that plan of putting the diseased brood over excluder, leaving the queen below. It appears that I tried it in two cases and it was a success in both. You tried it, and it was generally a failure, although a success in a few cases. What does that prove? Not much of anything. It might be thought that it proves it is sometimes a success. Not at all. For sometimes bees clean up of themselves, and the treatment may have had nothing to do in the case. It might be thought that it proves it is sometimes a failure. Not at all. For it may be that the treatment was effective in every case that you tried, but the colonies treated were freshly infected from neighboring diseased colonies.

The moral of this is that, do the best we can, there are chances lurking in wait; but if we stop the feeding of brood for a certain time the chances are so favorable that we may go right on producing crops of honey without worry, fighting the disease whenever it shows itself again, just as we keep on raising good crops of garden stuff without blubbering over the few weeds that may need the hoe.

Marengo, Ill.

Relation Between Aphid Infestation and Blight Infection

BY J. H. MERRILL, PH. D.

Assistant Entomologist, Kansas State Agricultural Experiment Station

FOR many years it has been customary to put all the blame upon the honeybee for spreading the various forms of blight, commonly called "blossom blight," "twig blight," "fire blight," "pear blight." It is known that this disease passes the winter in "hold-over" cankers on the limbs, which exude a gummy substance filled with blight bacteria, in the spring. It is also known that in order to damage twigs and blossoms the bacteria have to be carried by some agency from these cankers to other parts of the tree. As bees visit orchards when in bloom, they were considered to be the agency by which this blight is spread. For years this was accepted without any questioning.

However, it has been noticed that blight was present in young trees growing in nurseries which never had bloomed and which consequently offered no attraction to bees. It was also noticed that new growth which appeared on apple trees after blossoming time was blighted and there seemed to be no reason for blaming the bees as they did not frequent such twigs.

Experiments have been carried on of late to determine what other insects might play a part in spreading this disease. In order for blight to appear on a young tree which never has bloomed, or on new growth twigs, it is necessary for the bacteria to gain an entrance into them. How can this be more easily accomplished than by sucking insects crawling over the cankers, later piercing the young growth with their beaks and thus introducing the bacteria into the twig?

Experiments are now being carried on by the entomologists of the Kansas Agricultural Experiment Station to show what relation exists between aphids and blight infection. At Cornell Experiment Station, it was definitely proved that sucking insects, such as the tarnished plant bug, can and do spread the blight.

In Kansas, observations on the relation of the abundance of aphids to the severity of blight infection have been carried on during the years 1913, 1914, and 1915. In the spring of 1913, large numbers of green aphids were noticed clustering on the unopened apple buds. Several orchardists were induced to spray their trees with a contact insecticide to control these aphids. Later, blight appeared quite generally in the apple orchards, but it was noticed that in those in which the aphids had been controlled very little of this disease was present. In 1914, there were very few aphids and very little blight. In the spring of 1915, the aphids again appeared in very large numbers, but this year more of the orchardists controlled the aphids by spraying their trees before blooming time with a contact insecticide. Blight appeared later in every orchard in which the aphids were not controlled, while there was practically no blight in those orchards which had been sprayed with a contact insecticide. Jonathan trees are very susceptible to blight injury, yet in a large block of these trees, part of which were treated for aphids and part untreated, blight was found only in the untreated portion.

These observations, which have been carried on for three years, show that there is a direct relation between the aphid infestation and blight infection. It is not the intention to claim here that aphids are the only carriers, as other sucking insects have also been

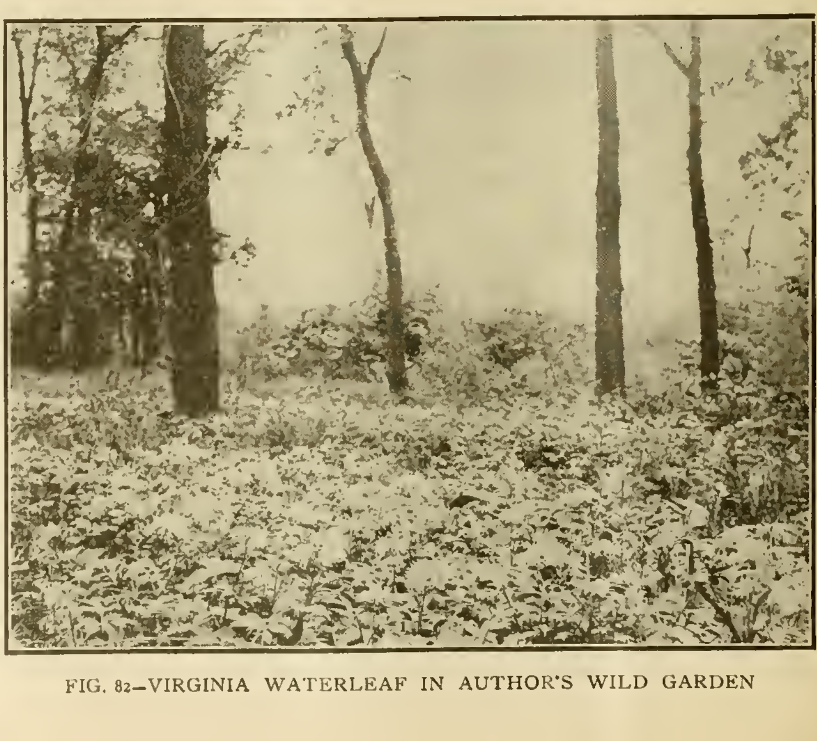


FIG. 82—VIRGINIA WATERLEAF IN AUTHOR'S WILD GARDEN

found guilty. Improper care of pruning tools may also be responsible for its spread.

These results tend to show that entirely too much blame has been hitherto attached to the honeybee as an agent for spreading blight. The honeybee visited orchards which had been freed from aphids as well as those which had not, yet blight was found only in the portions infested with aphids. Further experiments are being carried on by the Entomology Department of the Kansas Agricultural Experiment Station to secure additional data on this subject.

Manhattan, Kan.

Hives and Swarms

BY TARLTON RAYMENT.

WITH the advent of spring the question of swarm control crops up with regularity; that the subject is still as fresh as the vernal greenness may be gauged from the prominence given to recent discussions. With your permission, Mr. Editor, and with all due apologies to those writers whose schemes we have unintentionally plagiarised, we shall endeavor to detail our treatment of colonies that insist on swarming.

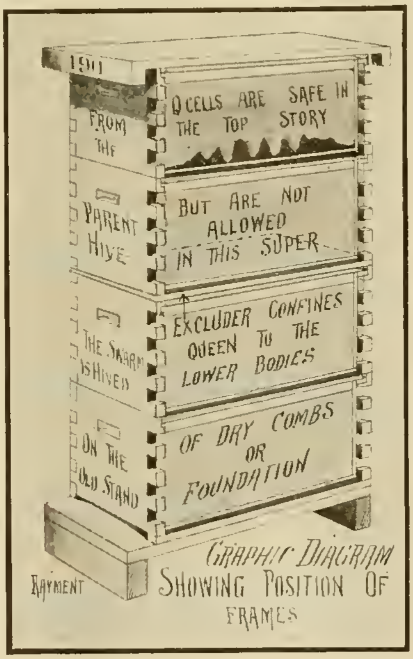
Like many American apiarists, we have a predilection for the dimensions of the 8-frame hive, and time was when we experimented with the Heddon—or Bolton pattern, as it is known in Australia, but they are synonymous—also larger sizes of Langstroth hive. Experience, however, sent us back to our first love.

It is generally conceded by beekeepers of extended experience, that the swarming problem is greater with the 8-frame than with any other standard hive, yet we have found no material difference in the bees' behavior due to the house they live in. We have no set rule nor limit to the number of bodies and combs each colony shall occupy. It not infrequently happens, during a flow, that the colonies of an entire yard tenant hives of four stories; two bodies each containing 8 frames for brood, while the remaining couple have 7 frames each for supers. The bees actually use 30 frames. The use of supers even on the 10-frame size is universal. What, then, constitutes a large hive?

The whole subject of swarm control hinges mainly on the management of the apiarist, while the hive pattern is but a minor factor, bearing in mind, of course, our refusal to be tied down to any specific number of frames. Since the queen may utilize 16 or more frames for brood and eggs, there is little or no use for queen-excluders *prior* to the issue of the swarm.

It may be objected that brood in the honey frames is very inconvenient when extracting. In *theory* that is so; in practice, however, no difficulty presents itself with our system of working. The size of the hive, and the large number of frames constitute such an *elastic* whole, that we are never forced to extract from combs containing brood; they are simply moved to the sides of the super. On the next visit they are free from brood and full of honey. Towards the termination of the honey season the super space is gradually withdrawn so that all incoming honey is stored—natually, since it is the top of the hive—in the second brood-chamber as fast as the young bees emerge from the cells. This effectually precludes the future use of the combs for brood purposes. When severe winter threatens, what a mighty population is crammed into one story when the second brood-chamber is removed! Sometimes the bees cannot all get inside. In mild seasons, the brood-nest is placed *over* the body of empty combs and left to winter in that position.

Using the 8-frame bodies in the manner described reduces the swarming difficulties to the minimum, while in our every day work we have proved, to our satisfaction at least, that no frame or other hive stands out preeminently as a regulator of the colonizing instinct. Management is the paramount influence.


1911
FROM THE
PARENT HIVE
THE SWARM IS HIVED
ON THE OLD STAND
Q CELLS ARE SAFE IN THE TOP STORY
BUT ARE NOT ALLOWED IN THIS SUPER
EXCLUDER CONFINES QUEEN TO THE LOWER BODIES
OF DRY COMBS OR FOUNDATION
RAYMENT
GRAPHIC DIAGRAM
SHOWING POSITION OF FRAMES

With our system, which entails the clipping of all queens' wings, we await, free from all misgivings, the advent of the big swarms from the 4-story hives. When the expected happens, the parent hive is removed to one side, temporarily, while the swarm is provided with two bodies of dry comb. A queen-excluder covers the top. The two brood-chambers of the original stock are then carefully overhauled and all frames showing well developed queen-cells are grouped together in one body. The cell-less frames are placed over the excluder and the body containing the queencells completes the pile. Being on top the queencells are readily accessible, and needless to remark those completed in this manner cannot be surpassed. When all brood in the top stories has emerged and the ripe cells are disposed of the excluder is removed.

Should increase be desired the surplus brood-combs with ripe cells attached may profitably be divided into nuclei. There is no loss of brood, as it cannot get chilled nor does it starve owing to a dearth of nurses; while the young bees seldom, if ever, desert the new stand. The supers from the parent colony may be extracted or used to entice other colonies to work "upstairs."

The practices here described are not put forth as original, but the plans outlined are practical, and, with us at least, have provided a constant and reliable method of handling bees when the objective is a crop of honey with its natural corollary, hard cash. We have endeavored to illustrate the position and arrangement of the combs in the accompanying drawing.

N. B.—Should queencells be permitted to remain in the super contiguous to the queen, the intention will be defeated by the reissue of the swarm. The provision whereby the queen is kept *at a distance* from the cells is a vital portion of the scheme.

Gippsland, Australia.

Honey at the Panama Pacific Exposition

BY CHARLES DUFF STUART.

A CANVASS of the Panama Pacific International Exposition exhibits on Sept. 23, 1915, revealed some curious phases and facts concerning honey-growing in the United States as well as in foreign countries.

Of the 26 State buildings visited, only one, California, exhibited honey, and few exhibited other food products in their State buildings. Eight of these States, Arkansas, Illinois, Iowa, Maryland, Massachusetts, New Jersey, Oklahoma and Pennsylvania had no exhibits of honey, and manifested no interest in its production; while other States that produce honey extensively apparently did not consider the occupation seriously. Especially is this attitude true of Indiana and Texas.

The manager of the *Indiana* Building somewhat reluctantly explained that his State was giving very little official attention to the honey industry, probably for two reasons, because there were such quantities of wild honey, and because other pursuits were more profitable to the farmers. This gentleman had specialized in animal husbandry, yet the housing of the bee had never been considered by him, although Indiana is rich in bee-pasturage. Under propitious natural conditions it did seem a bit strenuous to set up an apiary when, according to our informant, one could go out and gather honey by the pound from a hollow tree in the back lot somewhere.

Texas, although second only to California as a producer of honey, made no exhibit at the Exposition, and had no literature on the subject. However, a delightful old Texas Colonel unofficially came to the rescue of the Lone Star State and assured us that honey-growing is one of its commercial industries; that from Beeville alone $1,000,000 worth was shipped in 1914; that the apiaries are all large, containing from 250 to 1200 colonies each; that the State annually appropriates $10,000 to fight bee-diseases; that the crop is from 75 to 100 pounds to the colony and consists of both extracted and comb honey, while unripe honeys find their way to the vinegar cruet. He attributed the success of the bee-industry to the dry climate and the abundant honey-flora, on which he was equally well-informed.

In other States, judging from information gathered in our rounds, the bee is regarded more or less humorously—a nuisance tolerated only because of its ministrations to the sweet tooth of man. And in no State, not excepting California, was there a full appreciation of the commercial possibilities of honey-producing.

Kansas does not recognize honey as a commercial enterprise, though it is said to be an important by-product. *Missouri* claimed to produce some honey from wild flowers, alfalfa, sweet and white clover; *North Dakota* disposes of its honey locally when there is a surplus. Italian bees are kept and a white honey is generally produced. *Wisconsin* does not recognize honey-growing commercially.

Besides Texas, of the three other southern States represented by separate buildings, Mississippi, West Virginia and *Virginia*, only the latter exhibited honey, although interviews with the managers indicated unlimited and almost untouched possibilities in their sections, owing to the mild climate and the abundant pasturage.

A charming *Mississippi* hostess talked very entertainingly on bees and beekeeping in that State. At first it would seem that bees are kept solely for the wax that is needed in grafting pecan and orange orchards; but later she told of a poisonous yellow jasmine honey, for which there is no known antidote, and of a superior product called the melilotus honey, produced in the central part of the State. Some one indiscreetly remarked that he had never seen the honey advertised, to which the lady indignantly replied, "We don't have to advertise ouah honey. We haven't enough for ouahselves."

In 48 counties out of 55 recently visited by a State official in *West Virginia*, nearly every farmer kept a few bees. No literature on beekeeping was obtainable in their building. Buckwheat is said to be the important source of honey, a dark product with a peculiar odor and strong flavor, delicious to the native but for which the outsider must cultivate a taste.

Louisiana had no separate building, but her extensive exhibit of resources in the Agricultural Building contained no honey, although we were told that much is produced from the tupelo gum, sweet gum and Japanese clover.

AGRICULTURAL BUILDING.

Of the honey exhibited in that building, the famous 12 varieties of a leading *New York* dealer were the most fascinating; not that the honey was whiter or more attractively displayed, but who could gaze on such labels as locust, raspberry, milkweed, white clover, buckwheat, alfalfa, dandelion, heartsease, sumac, goldenrod, fruit blossom and basswood, and not be consumed with a desire to sample the contents of the jars?

Ohio had a large show-case filled with comb and extracted honey, also a considerable amount of wax, and the Idaho and Virginia booths contained exhibits of extracted and comb honey from private exhibitors. In *Idaho* alfalfa and white clover furnish the nectar, and in *Virginia*, alfalfa and crimson (not red) clover are the principal honey plants. *Montana* had a fine display of white sage and alfalfa honey.

The honey in the *Nevada* booth while of good quality and tastefully arranged, did not fairly represent the importance of an industry which though still in its infancy, yields annually many tons. Both white and sweet clover are plentiful in Nevada, but the principal pasturage is alfalfa, which, in the higher altitude, furnishes a fine grade of water-white honey.

HORTICULTURAL BUILDING.

Both *Washington* and *Oregon* had a modest exhibit in that building, while Utah's was somewhat more pretentious. The latter display occupied a separate show case, and their comb honey was displayed in attractive cartons appropriately decorated, in the sides of which round holes were cut to permit of inspection.

CALIFORNIA STATE BUILDING.

There seem to be only two sections in California so far as honey-producing is concerned, north of Tehachapi and south of Tehachapi, the latter claiming quality and climate and the former claiming quantity and a sure crop.

Los Angeles, San Diego, and Ventura counties and Imperial Valley combined in one splendid exhibit representative of southern California honey-growers, The northern counties of Sacramento Valley had an equally imposing exhibit characteristic of the honey industry in that section of the State.

Monterey had the best exhibit of any single county in the California Building, and is eager to secure more beemen for its fine locations which they claim will accommodate 1000 apiaries. The pasturage is white sage and wild flowers, and their exhibit included also honey made from manzanita, a dark amber, and honey from button sage and cascara.

HONEY EXHIBITS IN FOREIGN COUNTRIES.

Of the 18 foreign buildings visited, only four, Canada, Australia, New Zealand and Siam included honey in their exhibits.

Honey in Australia is produced mainly from the many varieties of the eucalyptus or gum tree, of which the red gum is said to produce the best quality. Sample jars were distributed to the public, that to the unaccustomed palate left a peculiar aftertaste, like a dose of medicine disguised in honey. A large upright show case was devoted exclusively to both comb and extracted honey.

A clear white extracted honey is made from white clover in Ontario, Canada.

In New Zealand the vegetation and general conditions are much the same as in Australia. The honey runs from dark to a very light amber, almost white, the former being produced from a wild plant called catsear, and the latter from white clover.

The small, ornate Siam Building contained two tiny bottles of very dark honey and a few cakes of wax.

Cuba's exhibit in the Food Products Building contained some honey of a light color and somewhat muddy in appearance.

Argentina was represented by a small exhibit of extracted light-colored honey said to be produced from alfalfa, and some wax.

Though there is excellent bee-pasturage in the *Philippines*, it is said that the climate is too hot for any except the native wild bee. Several attempts have been made to domesticate the bee, but colonies imported from Australia and Italy soon die.

Unlike our States, that consider the honey industry important as it may be estimated commercially in dollars and cents, European countries accept the bee as matter-of-factly as the family cow or hen. It has its own place in their scheme of domestic economy.

"Everybody keeps bees in *Sweden*," said the hostess of that pavillion; but there was no special information or literature to be had.

A young man in the *Netherlands* Building, after an exhaustive search through the literature of their information bureau, found mention of honey wine and honey brandy, and a honey plant called heyde, a low-growing shrub found in sandy regions. One naturally concluded that nectar from heyde must be of an intoxicating character, but this impression was later corrected. We found that both comb and extracted honey is produced, and the black German bee is kept. The Indian colonies, like the Philippine Islands, are too warm for the production of honey.

The coffee-tree of *Guatemala* has a small white cluster flower, said to contain much nectar. There being 200,000 acres in coffee plantations in that country, honey growing should become a great industry provided the climate is favorable.

Apparently the *Japanese* are going into honey-growing with their characteristic energy and thoroughness. The government is investigating methods and equipment for getting the best results. They use the American hives and only Italian bees. Through the interpreter we learned that the rape plant is the principal source of commercial honey in Japan, though there is other and greatly diversified pasturage. "It is not like here in California, here a flower and there a flower, said he, "but in Japan everywhere flowers, all kinds." The industry is still in its infancy. There was no exhibit. They produce both comb and extracted honey. At present honey is imported to Japan from both Italy and France. As in other lines, Japan is passing on to China the knowledge gained in apiculture. General conditions are much the same in the two countries.

MISCELLANEOUS EXHIBITS.

The live-bee exhibit in the Education Building attracted much attention. There were three observation hives housing respectively Carniolans, Caucasians and Italians. The most unique feature was the wooden chutes or passage-ways that projected through the outside wall of the building and furnished the means by which the bees trafficked in the nectar from the myriads of flowers that decked the Exposition grounds. The passage-ways were sufficiently high not to interfere with the passing crowds on the outside, and on the inside of the building at a point near the hives, they were provided with a tiny pane of glass in order that the comings and goings of the bees might be observed.

Another observation hive was stationed in the A. I. Root exhibit in the Food Product Building. This was mounted on a pedestal and was continually surrounded by an interested group endeavoring to locate the queen-bee.

In the same booth, under the auspices of the California State Beekeepers' Association, were shown some curios in a glass case, labeled, "Bees in Literature and Art." These were a loan from the valuable bee library of Mr. M. C. Richter, our western authority on apiculture.

But most interesting to the impecunious beginner in apiculture, were the five maps of the United States Forest Service on the walls of the booth. Each map showed a particular forest in California where "Special Use" permits for apiaries had been granted, and the exact location of such permits issued by the Forest Service. An explanatory chart told how interested persons might proceed to take up (at a nominal rental) an apiary site upon the government forest reserves.

Los Gatos, Calif.

MISCELLANEOUS NEWS ITEMS

Save the Waste Paper.—This is the recommendation of A. I. Root, in Gleanings for April 15. Although a matter of this kind is hardly in the line of beekeeping, we feel it to be wise enough to repeat it. America is a country of wastefulness. It is time we should learn better.

A few days ago, we received a letter from the publisher of the Spanish edition of the "Hive and Honeybee," Mr. Gustavo Gili, of Barcelona, Spain. He stated that paper for book printing was getting so high priced that he wished to have American quotations. In compliance, we wrote to two firms asking them to send Mr. Gili their wholesale prices on book paper. The replies were that they could barely supply the home demand and that it was of no use to make offers to foreign purchasers.

We waste paper. In the average American city, the streets are often littered with unseemly, dirty, flying newspapers, wrapping papers, cardboard, etc. We may see the day when we will wish we had been less wasteful.

◆

Spring Beekeeping School.—The most ideal time in the year to study bees is May and June when the colonies are at their maximum in strength and activities. The bees are easily handled. The student quickly gains a full acquaintance with the majority of the manipulations necessary to beekeeping. At this time of the year once in three years an intensive course in beekeeping is offered at the Massachusetts Agricultural College, primarily for a limited number of practical beekeepers. This year particularly the course is being conducted by an especially strong staff of the college faculty, and will occupy seven hours daily for two weeks at Amherst, beginning May 31 and ending June 14, Saturdays being devoted to excursions. The course comprises lectures, laboratory practicums, work in the bee-yard and field excursions. It is under the direction of Dr. Burton N. Gates.

The college maintains a practical bee-yard of about 50 colonies as well as outyards, and a well appointed bee-house and laboratories, besides a wax working laboratory, library, and beekeeping museum. These exceptional facilities are offered the student in this subject.

COURSES.

1. *Practical Beekeeping* — Lectures: laboratory practice in the general work of the beekeeper; beekeeping equipment, practices in the preparation of materials, location of the apiary; commencing with bees, handling of bees, practice in beeyard procedure; spring manipulation; fall preparation, wintering; comb and extracted honey production; bee diseases and their treatment, apiary sanitation; making increase; elements of queen-rearing, etc.

Burton N. Gates, Associate Professor of Beekeeping; John L. Byard, Superintendent of the Apiary; Gladstone H. Cale, Laboratory and Apiary Assistant.

2. *Life of the Honeybee* — Lectures: Henry T. Fernald, Professor of Entomology.

3. *Special Problems of the Beekeeper*—Lectures: demonstrations in requeening, the races of bees, the introduction of queens; swarming and handling swarms; comb honey production, enemies of bees.

James B. Paige, Professor of Veterinary Science.

4. *Crops Foraged by Bees*—Lectures: field excursions.

William P. Brooks, Director of the Experiment Station.

5. *The relation of bees to the pollination of plants, including coloration, odor, nectar secretion*—Lectures: laboratory work in blossom structure and dissection.

A. Vincent Osmun, Associate Professor of Botany.

6. *Bees in Horticultural Practices*—Lectures: field work in the utilization of bees in fruit production, market gardening, cranberry culture and greenhouse cucumber growing; beekeeping as affected by spraying practices.

Walter W. Chenoweth, Associate Professor of Pomology.

GENERAL INFORMATION.

Amherst is desirably situated in the Connecticut Valley. In May and June the scenery is at its height in beauty, hence this season offers a pleasant opportunity for the course at the Agricultural College. Besides the work in beekeeping, ample opportunities will be afforded to visit the other parts of the Massachusetts Agricultural College as well as to visit Amherst College. Excursions will be taken as opportunity and the work may demand. It is usually customary to make a trip to some practical beeyard and queen-rearing establishment. Students returning from this course should be well equipped to handle bees on their own account.

◆

Soaking Old Combs in Water.—On page 189 of 1914, you say "keep old combs covered with water to preserve from moths until they have time to render them." I have had sorry experience with this plan. The mass fermented and the wax was rendered a dark greenish-brown color, and gained an odor which is positively vile. This may not occur if there is absolutely no honey to cause fermentation. I am not sure there will be no fermentation, even with dry combs, because of the cocoons and other refuse.

Perhaps a word of caution to your readers along this line would be helpful.
E. G. CARR.
New Egypt, N. J.

Mr. Carr is right, and the advice given did not contemplate keeping the combs in water beyond a few days, in summer. In cold weather or fall they may be immersed for several weeks without injury, and we have found the color even improved and the quantity of wax secured is increased because of the water-soaking of the residues. The wax separates better in such a case. But Mr. Carr's warning is good.

◆

Bees at the Michigan State Fair.—The Michigan State Fair authorities have adopted the recommendations of the State Association of beekeepers concerning regulations and premiums at the Fair. The list of premiums now offered amounts to $575, instead of $132 as formerly. Full information may be secured by addressing E. B. Tyrrell, Superintendent of Apiary Department, 20 Grand Avenue, W., Detroit, Mich.

◆

An Error.—In our last number we made the advertisement of Mr. Kennith Hawkins read "2400 more queens" while it should have read "24 or more queens." Not even a combine of queen breeders would think of offering prices on such a batch of queens at one time.

◆

Report on the Wintering of Bees in Ontario.—Up to the present date, April 20, about 700 persons keeping 20,000 colonies of bees have reported a winter loss of about 13 percent. The loss was largely due to starving, owing partly to an insufficient supply of stores on account of the high price of sugar and partly to a mild spell in January, which caused the bees to rear brood and draw heavily on their stores. The few warm days early in April gave the bees a cleansing flight, and their general condition now is reported as very good. Few really heavy losses have been reported from extensive beekeepers. More report forms than ever have been returned marked "Not a beekeeper." These are mostly from the smaller beekeepers, who are finding that specialization pays best. It is an indication that the industry is getting on a better business basis from year to year.

Clover prospects seem very good throughout the Province. The latter part of the season of 1915 being wet gave the new seeding an excellent start, and the scarcity of farm labor has increased the acreage seeded down. On the whole, present indications are for a good season, and beekeepers are even more optimistic than usual.

Morley Pettit,
Provincial Apiarist.

Obituary.—Dr. J. J. Brinkerhoff, aged 47 years, a physician and beekeeper of Minooka, Ill., died at Joliet, Ill., April 4, following an operation on his throat. Dr. Brinkerhoff was a scientific beekeeper, and because poor health kept him from his practice much, he became interested in bees. He did his share to get the foulbrood law in Illinois, and worked early and late in helping rid his community of foulbrood, often giving his services gratis to beekeeping neighbors who needed help in cleaning up. He was well known at the Illinois and Chicago-Northwestern meets and always a booster. Beside his his wife he leaves four children, John 17, Eva 16, Rachael 9, and Gertrude 7 years old. His beekeeping friends extend their sympathies to them.

Kennith Hawkins.

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Death of C. C. Clemons.—It is with regret that we chronicle the death of Mr. C. C. Clemons, of Kansas City, Mo. Personal acquaintance with Mr. Clemons had given us the highest opinion of him both as a man of kind and considerate personality as well as a business man of integrity and honesty.

Mr. Clemons, who was 76 years old at the time of his death on May 4, had been engaged in the commission business for many years, and in that time made the handling of honey one of his specialties. He also handled bee supplies to some extent, working under the name of the C. C. Clemons Bee Supply Company. So far as we are informed, this company will continue in business, his associates assuming charge.

Minnesota to the Front Again.—The division of bee-culture of the University of Minnesota, under the management of Prof. Francis Jager, helped by L. V. France, is taking steps to secure a complete survey of beekeeping conditions in the State by sending to each beekeeper cards with blanks asking him to reply to questions and join in the effort and become observer for his special locality.

The ground to be covered includes the success with different methods of wintering, information concerning the extent of spring dwindling, pollen and honey plants, honey flows and best locations for honey production. The distribution of the beekeepers and the extent of bee-diseases will also be looked into. Such a survey will be invaluable to the beekeeping interests of any State.

Queens are bred in the State Farm apiary and offered to the beekeepers of the State at 50 cents each, no one being entitled to more than three at this price. If good queens are produced, as aimed, this will give opportunity for greatly improved breeding.

Attention is called to the fact that the Minnesota State Fair is offering $1168 in premiums, the largest amount, by far, of any State in the Union.

The Fair secretary, in his 1915 report says: "The exhibit of honey and bees in the Apiary Building attracted more than usual interest this year. The fact that one Minnesota beekeeper brought 30,000 pounds of honey (15 tons) to the Fair, worth $4500, seems almost unbelievable; nevertheless it is a fact. A large part of this honey was used in extracting and bottling demonstrations during the Fair. It is said that the 15 tons was only about one-half of the owner's crop for the year."

Minnesota is at the front, surely.

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British America—Regulations of Bee Importations.—Owing to the existence of foulbrood, the Province of British Columbia has passed the following order:

"Notice is hereby given in conformity with Section 12, of the Foulbrood Bees Act, 1911, Chap. 18, that any or all bees imported with their hives into the Province of British Columbia shall be quarantined at the point of entry into said Province, or at such other place as may hereafter be appointed for a period of not more than nine months, and if such bees are found to be infected they shall be destroyed; and to further recommend that bees imported by the pound, in packages, or crates, may be admitted into the Province of British Columbia upon production of a satisfactory certificate, from a State or Provincial Inspector, of freedom from foulbrood at point of origin."

Shippers of bees and queens will need to comply with the above requirements. The need of inspectors of bees in every State is becoming more and more apparent.

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Inspection Warning. — When inspecting an apiary for disease, one is apt to look for it in the weakest colonies. This is correct. But if the disease is in the incipient form, it may have been gained from the bees of some neighbor, by robbing. In that case it will be found most likely in the strongest colonies. Therefore, after examining the weak ones it is well to go to the strongest for possible initial stages.

An Inspector.

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Bexar Co., Tex., Field Meet.—The beekeepers of south Texas will hold their annual field meet and and basket picnic on June 18, in San Antonio. The meet will be held in the apiary of Mr. E. G. Le Stourgeon and the Bexar County Beekeepers' Association will be host, having invited the attendance of the other county associations. State Entomologist F. B. Paddock, Prof. Louis H. Scholl, and other well known beekeepers of Texas will be on the program. Demonstrations in handling bees and an object lesson in foulbrood treatment will be made for the benefit of visitors. A large number of beekeepers and their families are expected.

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Summer Course in Ontario.—A summer course in beekeeping is being arranged at the Ontario Agricultural College for the week of June 12. It will consist of apiary demonstrations and practice. Day sessions will be conducted in the apiary as far as possible, and illustrated evening lectures will be given.

Such special subjects as Wintering, Swarm Control, Bee Diseases, Queen Rearing, Requeening, and the like will be taken up in turn, and demonstrated by means of the bees and appliances in the apiary. Instruction will be given by the Provincial Apiarist, assisted by prominent beekeepers.

Mr. Frank C. Pellett, State Apiary Inspector of Iowa, has consented to spend a few days of the week in attendance and assist in the instruction. He will also give illustrated evening lectures on "Beekeeping in the Mississippi Valley," and on "Our Backdoor Neighbor." The latter subject deals particularly with the economic importance of wild life, including bees and insects.

The Wellington County Beekeepers' Association is arranging to hold a field day at the college during the week of the summer course.

Morley Pettit.

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New Brunswick Meeting.—The New Brunswick Beekeepers' Association met in annual convention at Fredericton March 2. While the attendance was not large those who were present made up in enthusiasm for what they lacked in numbers.

Mr. L. T. Floyd presided. The president's address was most interesting and optimistic in tone. It spoke of good crops of honey, good markets, and a greatly increased demand for the products of the bee.

The secretary-treasurer reported a membership of 53. He also reported that several hundred dollars worth of supplies had been purchased through the association by its members at a very considerable saving to themselves.

The Provincial Apiarist, Mr. H. B. Durost, told of greatly increased interest in bees. Many inquiries for bees and for information for their care were being received from all parts of the Province.

Mr. F. W. L. Sladen, Dominion Apiarist, delivered a most interesting and helpful address on general beekeeping practice. The many questions with which the speaker was plied and the lengthy discussion which followed the address showed the amount of interest aroused.

The election of officers resulted as

follows: President, Mr. L. T. Floyd, Central Norton; 1st Vice-President, Mr. David Hiscoe, Fredericton; 2d Vice-President, Mr. G. S. Peabody, Woodstock; Secretary-Treasurer, Mr. H. B. Durost, Woodstock.

The question of handling supplies again this year was left for the Board of Directors to settle.

H. B. DUROST, *Sec.-Treas.*

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Average Return Per Colony—Location

1. What amount of money can one make out of a colony of bees each year?

2. I would also like to have your opinion as to a good location in Michigan

MICHIGAN.

ANSWERS.—1. There is a strong temptation to answer by saying, "I don't know," but I suppose the roughest kind of a guess would suit you better than that. You see there are so many factors to be considered: the season, the kind of bees, the locality, and the *man*, or at least part of them Dr. E. F. Phillips estimates the average annual crop at 25 to 30 sections, or 40 to 60 pounds of extracted honey. Some probably don't do half as well as that, while there are beekeepers who would not feel satisfied if they could not double it. As you are among those who have literature upon the subject, I should *guess* that you would do better than the average, perhaps averaging 40 sections, and that might bring you $4.00, $6.00, or $8.00, according as you would wholesale it at a low figure or retail it by the section at a high figure.

2. Most of the best locations in Michigan are already fully occupied, which is as much as saying they are no locations at all; the most important item in choosing a location being to find one where there are few or no beekeepers. From what little I know about it, I should guess you would do well to do a little prospecting in the northern part, perhaps in the burnt districts where fireweed and raspberries abound.

Granulation of Comb Honey

I am sending you under separate cover two small pieces of comb honey marked sample "A" and "B." Both of these samples are cut from section comb honey, which was represented to be white clover, and both, as you will note, are of distinctly different flavor. Sample "A" is from a New York State producer, and considerable honey of this flavor was included in a shipment of white clover and basswood. All sections of the honey similar to sample "A" showed a remarkable tendency to granulate; in fact, it granulated last fall, about October or November, while the basswood comb in this shipment is still in good condition

Would you kindly give your opinion as to the source each of these samples have been gathered from. Also state as far as you know which of the eastern and western comb honeys are the most apt to granulate, and if there would be any way of telling from looking at a comb of honey whether it was of a kind that would granulate quickly?

I have read your frequent remarks about keeping comb honey at about 80 degrees Fahr., and at a uniform temperature, but isn't it a fact that some sorts of comb honey will granulate no matter how much care you take of it? What do you think is the cause of this? Is there something in one honey not found in another, which will cause one to granulate quickly and the other to keep liquid a long time? Would a chemical analysis of the comb honey reveal whether it was of a quick granulating kind?

Have you ever kept comb honey in a super over a colony of bees; if so, what about the tendency of comb honey kept in this manner to granulate?

NEW YORK.

ANSWER.—It was a surprise to find these two samples of comb honey in such excellent condition. A little square of honey was wrapped in tissue paper, then in writing paper, then in manilla paper, and put into a common pasteboard box, the whole wrapped in manilla paper. There was scarcely any leakage, and if honey would always come through in such good condition the problem of sending it by parcel post would be solved

I am not an expert at judging honey, but my guess would be that sample "A" was white-clover honey. Sample "B" might be a mixture of white clover and something else, or it might be without any white clover, and from some source which I don't know. It would, however, probably pass muster generally as white clover. It is probably not very often that you will find a section of honey that is *entirely* of one kind of honey. At a time when white clover is doing its best, a little search will show you some bees at work on other flowers than white clover.

I don't think there is any way by which you can tell by looking whether a piece of comb honey will granulate readily or not. Of course, if you know that one section is of alfalfa and another of sage, you will know that one will granulate more readily than the other; but that is hardly what you mean. Alfalfa granulates very readily, and sage very slowly. I don't know why. Also, a sample of honey will sometimes granulate more readily than another of the same kind of honey. I don't know what makes the difference, and I doubt whether chemical analysis would show which one would granulate first. I have an idea that a sample that is throughly ripened will be more slow about granulating. At any rate I've had white-clover honey keep three years or more without granulating, and I know no reason for it except that it was kept in an attic where it got very hot in summer.

I never kept a super of honey over a colony of bees in winter; but I have, of course, had frames of it in the brood-chamber, where it keeps well.

Moldy Comb

When I removed my bees from the cellar this spring several of the combs were covered with a light green mold. This comb was put into the frames last summer in comb foundation. Will the bees fix this moldy comb all right or will it have to be replaced with comb foundation?

MICHIGAN.

ANSWER.—The bees will clean them up all right. You will no doubt find that in the brood-nest itself there will be no mold, and as the brood-nest expands the bees will clean up each cell before using it. Some colonies may die in winter, and you may think of using for swarms the moldy combs left That would not be wise, for the bees of a swarm are more particular about their combs than are the bees of an established colony. But you can have such combs cleaned up in advance Fill them into a hive-body and set this hive-body under the hive of a strong colony. The combs will be nicely cleaned up by the time you will want them for a swarm.

Bees Thin Honey

1. Do bees store water in combs?

2. Do they work over their honey, thinning it with water in the spring? VERMONT.

ANSWERS.—1. I don't think they do.

2. I think they do.

A Beginner

1. How can I save a swarm of bees after they have clustered in a 45 or so foot tree?

2 Is the honey ripe when it is all sealed, or how long should it stay in the super after sealed until it is ready to be taken out and how is the best way to get it?

3. Would a honey-board be a great help?

4 Can a person smoke bees too much?

5. Would it be any advantage or disadvantage if the super was glass on each side except one inch all around the out edge? Would it be too light or too warm for them if shaded well?

6. Should bees be transferred when apple trees are in bloom?

7. How can I keep my bees from swarming if there is no entrance guard on the hive?

8. I caught a swarm of bees last spring. Will they swarm this year, and did they get the old or young queen? KENTUCKY.

ANSWERS.—1. Climb up and get the swarm in a basket; then climb down with it or lower it with a rope. Likely you can't do that if it is out at the tip-end of a limb. Maybe you can throw a stone over the limb, with a tight cord tied to the stone, so that the stone will bring down to you the end of the cord. Then you can tie a rope to the end of the light cord and pull it down. Then, the rope being across the limb, you having hold of both ends of the rope, shake the limb like sixty. If your hive is sitting on the ground where the bees fall, maybe they'll enter it. Now, seeing it's you, I'll tell you something a good deal easier. Cut off the queen's wings on one side, and then if the swarm settles on a high tree, don't bother your head about it, but find and cage the queen; set the old hive off its stand, and set the empty hive in its place, with the caged queen at the entrance; then when the swarm comes down, as it surely will, free the queen after the swarm begins to enter the hive.

2. There may be rare times when honey is sealed before it is ripe enough, but you are safe in counting that it is ready to take off when it is sealed. I can't give you special instructions about taking it off without knowing in just what shape it is on the hive, the kind of super, etc.

3 By a honey-board I suppose you mean a queen-excluder. Nearly all who produce extracted honey consider an excluder important; for section honey it is not needed if you have your sections *filled* with worker-comb foundation.

4. Yes, indeed. Don't smoke them more than enough to keep them from flying at you.

5. It would be a needless expense, and I don't think the bees would like it so well.

6. There is perhaps no better time if you use the old-fashioned way of cutting out the combs of brood and fastening them in the frames. Better wait until the bees swarm; hive the swarm and set it in place of the old hive, with the old hive close beside it; then three weeks later cut out the combs.

One way is to kill the old queen when you find queen-cells in the hive, and when they are sealed destroy all the cells but one.

8. They are likely to swarm if the season is good. If the swarm was a first swarm, the queen is old; if an afterswarm she is less than a month old.

Queen Eggs Sent by Mail—Making Queen Lay in Prepared Cups

1. Why can't the eggs of a queen be sent by mail in a piece of comb?

2. What is the Swarthmore plan of getting the queen to lay in prepared cell-cups? See Beekeepers Review, page 59, 1916, 4th paragraph. WISCONSIN.

ANSWERS.—1. I am not sure about it, but I think in Europe they do send them by mail. Of course, the distance sent makes a difference, and like enough the age of the eggs. The way is open for you to do some experimenting.

2. In the paragraph referred to, Jay Smith does not mention the Swarthmore plan; but does object that "taking a larva up with the needle, giving it a punch in the stomach, a gouge in the ribs, and taking it out into the sunlight and hot, dry air," may not "make quite such a vigorous, long-lived queen for having received such a heroic massage." Mr. Smith's ideas are worth considering. I do not now recall, if I ever knew, just what was the Swarthmore plan to get the queen to lay in prepared cells. For rearing my own queens, I have not for years done any transferring; preferring to use eggs and larvæ, as described in "Fifty Years Among the Bees," leaving the bees to do all the manipulation themselves.

Italian vs. Hybrid Stock

1. I have what I suppose are hybrids, and there are other hybrids around me. Would it be profitable for me to invest in a pure Italian queen, or would there be no gain by it on account of the hybrid drones?

2. I have read of the Italian red clover strain as valuable. Have you this strain, and how much would you charge for a queen? ILLINOIS.

ANSWERS.—1. Yes, it would be well worth while to get a pure Italian queen. Just how much gain there would be depends upon the quality of your present stock. The poorer they are the more the gain. Even if your young queens meet hybrid drones, you would have more Italian than black blood, and by rearing your young queens constantly from a pure queen you would be getting in more and more Italian blood, and soon some of your stock would be pure.

2. I don't personally sell queens, although there is a company that sells queens of my stock. I have no red clover stock, and if any one has queens of such stock you will be likely to find them advertised in the American Bee Journal. There have been bees that would work more than others on red clover, but the characteristic has not been well fixed, and the strain has generally run out. Some, indeed, insist there is no such thing as a red-clover strain.

Foulbrood

It is claimed that if a colony has foulbrood and the queen is taken away or killed and the colony left ten days, then requeened with a good Italian queen, it will in most cases cure the foulbrood. If a colony has died with foulbrood, and after a few days or months I throw a strong swarm into that hive, will they clean it up and will the foulbrood be cured? Or if I take a hive that has foulbrood and kill the queen, and after ten days I take a swarm and hive them with this colony, will that cure the foulbrood and will they clean it up? PENNSYLVANIA.

ANSWER.—If you are talking about American foulbrood, then you cannot safely do any of the things you suggest, unless it be to use again a *hive*, although some object even to that. But the combs cannot be used again safely. But in the case of European foulbrood, either of the plans you mention will generally result in a cure if the queen given be a vigorous Italian.

Cause of Wingless Bees

1. I have a hive of bees that has a lot of wingless bees; their wings seem to dry and shrivel up. They seem to be healthy otherwise. What is the cause of it?

2. Is a drone reared from fertile or unfertile egg? MINNESOTA.

ANSWERS.—1. Once in a while a young bee emerges with defective wings, for which there seems to be no special reason unless it be lack of vigor. Oftener it is caused by the bee-moth. Exchanging the queen for one of vigorous Italian stock, and then keeping strong colonies will likely remedy the trouble.

2. A drone proceeds from an unimpregnated egg.

How to Get Bees to Empty Old Combs

I have often read your answers to the question "How to transfer bees from old box-hives?" and have frequently used your method, but when the bees are all out of the old box-hive there is generally some honey left in the old crooked combs. How can I get the bees to remove this honey from the combs without permitting the bees from any other hive to get a taste of it? MICHIGAN.

ANSWER.—Your problem is not the easiest, if you want the combs to remain unbroken in the old hive. The only way I know of in that case is to have the old hive either under or over the new one, with all cracks closed, so no bee can get in from the outside except through the regular entrance of the new hive. The chances are that even after you have done this the bees will make very poor work at emptying the combs, and if they are gathering, just as like as not they will fill more honey into the combs. But you can cut out the combs, put them into a dish, set an empty hive-body on the hive, and set the dish in it, close up bee-tight, and the bees will make a good job of cleaning out.

Controlling Swarms

Knowing that you ran outapiaries for comb honey, would you kindly tell me the best plan to control swarming as far as possible. I want to put an outyard three miles from home and cannot be there all the time. I have your "Fifty Years Among the Bees," but don't seem to get what I want to know from that. IOWA.

ANSWER.—I doubt if there is any one thing in beekeeping that I have worked harder upon than finding an answer to your question; and I think I succeeded in keeping down to a minimum the matter of swarming in outapiaries. Exactly the plans I used are given in full in "Fifty Years Among the Bees." I don't think I can add anything to what is there given; but I may help by calling attention to what is given. I think it will pay you to study carefully all contained on pages 156 to 186.

Turn to page 174, "Preliminary Work," and you will see that before there was any real danger of swarming we began once in about ten days to look for queen-cells, and up to the bottom of page 176 you will find particulars as to proceeding up to the time when it would no longer do to depend upon killing cells. Then radical measures were taken, by taking away for a period of perhaps ten days the queen, or the brood, or both. One of the plans to do that was the "put-up plan," page 157. Although it is given there as a plan for proceeding after a colony had actually swarmed, we used it later before swarming had actually taken place. We may use the "Excluder Plan," page 177. It may be "Forced Swarming" (page 166), more commonly called shaken swarms. More likely than any other way, the "Dequeening Treatment" (page 181) will be used. This you will find given in the following very few words: "The queen is removed, the queen-cells are killed, and in ten days the queen-cells are again destroyed and their own queen returned or another queen given."

I don't know of any better way than one of the foregoing ways to prevent swarming in an outapiary, and if you find any point upon which you would like to ask further light, it will be a pleasure for me to answer.

Rearing Queens

How early do you consider it advisable to rear queens in the State of Alabama? MINNESOTA.

ANSWER.—As a rule good queens can hardly be reared earlier than the last of May in my locality in northern Illinois I don't know how much earlier the date would be in Alabama; perhaps a month or two.

The Swarming Problem

I keep bees in four outyards, and they are run for comb honey. One often sees articles on swarm prevention for outyards for extracted honey, but comb or section honey is a different and more serious proposition. The questions which now concern me are not so much swarm prevention as the best methods of treating bees to secure the most honey and no increase.

I doubt whether there is any method of non-swarming manipulation whereby one can get as large crop of section honey as to hive prime swarms and prevent afterswarms in a locality of summer or clover flow, and fall flow of about equal proportions However, I don't want increase and so here is the rub: I have followed your method as described in "Forty Years Among the Bees" in my outyards for ten or a dozen years, and it is all right if done thoroughly and in time; but the question of lots of super room, big entrances, lots of ventilation, shade and things to aid non-swarming have been thrashed out in bee journals for years, and are valuable and good advice, but for all this, the *real problem* still remains, how to manage swarming with the least interference with the honey crop. I *have never* been able to get much super work done with the queen caged or killed and virgin given, or when a colony prepares to swarm. Bees loaf, build burr-combs, crowd honey into the brood-chamber, and this time is *lost* right in the best of the honey flow. Others report work with the queen caged or absent, but it doesn't happen here; possibly they extract.

Here is a plan I have thought of trying this season, a week or ten days before swarming: Start cells from the best queens. A couple of days before maturity of the cells, go through colonies and kill all queens except the best, and 6 to 12 hours later give each a cell.

1. Would one run too much risk of hatched queens leading a swarm?

2. If not, wouldn't this cause the least interruption in super work, and at the same time get better stock?

3. Also, would this be more successful if colonies so treated were given cell before any swarm preparation?

4. How long after queen is killed would you give an unprotected cell?

5. Would it pay to go through colonies in three to five days and look for other cells and destroy them? IOWA.

ANWSERS.—1. If, at the time you give the cell, cells are not already started in the hive, I should not expect swarming; and perhaps not if you kill all cells already started; but not having tried it I am not sure.

2. It should, I think, cause as little interference as any; although I doubt if the interference would be less than with my plans as they work here; although they may not work so well with you.

3. Yes, but the later the better, so long as no cells are actually started.

4. About a day.

5. It would seem hardly worth while, provided the cell you gave was quite ripe.

Instead of a ripe cell, it might be worth while to try a virgin less than a day old Such a one, I think, could be dropped in the hive without caging, at the time you kill the old queen.

Alexander's Plan for Increase

1. Would you advise me to use Alexander's plan for increase in a small outapiary, and is it a good way to make increase?

2. Can you tell the best way to introduce a queen at an outapiary, when using this plan for increase?

3. Are there many boys in the bee-business; if so, why don't the American Bee Journal have a page for the junior apiarists?

MAINE.

ANSWERS.—1. The plan is good, and would work all right in an outapiary. But you will most likely be sadly disappointed if you expect as much as has been claimed for the plan; for it has been claimed that you have two good colonies in place of one to begin the clover harvest, and that you will get nearly twice as much surplus as you will by not dividing.

2. Any plan that is good in general will work well here; indeed, there is not much risk with any plan, for when the queen is given the bees feel themselves hopelessly queenless.

3. There are many boys engaged in beekeeping; but in connection with older beekeepers, generally their fathers. So few boys are beekeepers on their own hook that it is not at all likely enough of them could be mustered to sustain a department of their own.

Wintering—Increase

1. If I should remove a brood-frame from each side of a 10-frame Danzenbaker hive and substitute a solid board, and fill in the space at the ends of the frames with a board of the proper thickness, would it be equal for wintering to a hive with an outer case packed in the usual way?

2. Do you think it a good way to make increase and build up, as in an article by Hattie L. McManus, page 192, American Bee Journal for June, 1915.

WISCONSIN.

ANSWERS.—1. My guess would be that it would be nearly as good, but not quite.

2. Not having tried that exact plan, my opinion could not be very conclusive; but the plan looks hopeful enough to warrant that you would experience no great loss to give it a trial.

Increasing—Controlling Swarms

I have 30 beehives and do not wish any more than 30 colonies. Twenty-seven of the hives have bees in them, nearly all Italians. They have straight combs made on full sheets of foundation and wired. The other three hives lost their bees during the winter, but have the full drawn combs; have a few weak colonies. I use the precaution of giving plenty of storage room and ventilation to prevent swarming, and have been pretty successful so far in keeping down too great number of swarms. I want to have a few swarms this season on account of the seeming good prospects for a honey flow from white clover and alsike.

Of course, I expect to fill my empty hives with my first swarms, but what shall I do with any other swarms that I may have? Would it be practical to unite them with my weaker colonies; if so, how would you unite them? Please give your plan of uniting with newspapers between colonies. How many sheets of paper do you use? When uniting a swarm with a weak colony would you kill either queen?

KENTUCKY.

ANSWER.—Yes, you can unite swarms with weaker colonies; but it may be as well or better, in your case, to unite the weaker colonies first. Uniting them by the newspaper plan is very simple. I generally use a single thickness of newspaper, but have used two. Lay the newspaper over the top-bars, set the other hive on that, of course without its bottom-board, and cover up. That is all there is to it; the bees will do the rest. There is no chance for a bee to get out of the upper hive until a hole is gnawed through the paper, and then one bee at a time will get through at first, and there will be no fighting.

If there be any choice of queens, kill the poorer, and it will be as well to do this two or three days previously, and then set the queenless one on the other. But if you leave it to the bees they will be likely to kill the poorer.

After doubling the weak colonies you have an increased number of empty hives, and can now double up swarms. After having the first swarm, when the next swarm comes, instead of hiving it in an empty hive, hive it in the same hive with the first swarm. Then hive the third and the fourth in the same hive, and so on.

There's another way you can do to keep down increase. When a colony swarms, return the swarm and kill or remove the queen. It will be better if the queen be clipped. Then a week later kill all cells but one. A better way is to begin listening with your ear to the hive about a week after you returned the swarm. Go in the evening, after the bees have stopped flying and you will hear better. When you hear the young queen piping, go to the hive the next morning and kill *all* the cells. That's all.

Getting a Swarm from Between Walls—Requeening—Foulbrood

1. Could a swarm of bees be taken from the walls of a house with the aid of a bee-escape, without tearing off the boards? If it cannot, how would you get it out?

2. Would it be of any value to requeen just before a honey flow? I would like to change my strain of bees to 3-banded Italians, and would like to do it early.

3. Which is the best way to treat hives where bees died of foulbrood several years ago, and have never been used since?

IOWA.

ANSWERS.—1. By means of an escape you could get all bees that would fly out, but not the queen. By injecting carbolic acid, or something of the kind, you might get the queen.

2. Almost any time is a good time to requeen if you requeen with better stock. If you requeen just before the harvest, there may be a little break in brood rearing that may affect the harvest more than requeening at the close of the harvest. On the other hand, requeening with a young queen just before harvest might stop the colony from swarming, and so increase the crop.

3. Some good authorities think that such a hive should be scorched inside with a painter's torch, or else have straw put in it and burned; and that no matter whether it has been freshly occupied by a diseased colony or not for years. Others think there is no need to give the hive any treatment whatever. But all agree that the only treatment for the combs is to burn or melt them.

Distances for Proper Mating

1. In mating queens does it make any material difference if they are mated with drones from the same queen mother; if so, what is the difference?

2. Also how far would one have to put his mating nuclei away from other bees to insure mating with proper drones.

3. What would you consider a good test to prove that bees were *pure* Italians?

WISCONSIN.

ANSWERS.—1. Like any other case of inbreeding, there is danger of weakness and deterioration.

2. Some think a distance of half a mile is pretty safe. A mile is better, although there may be a *possibility* of trouble at a distance of two miles or more.

3. The orthodox test is the three yellow bands on all the workers. But a few workers off color should not condemn a colony, for they may have come from another colony, as bees do a good bit of straying.

Returning Afterswarms

In returning an afterswarm to the parent colony, where the hive is some distance above the ground; in fact, too high to permit of conveniently hiving them at the entrance, would you advise shaking them in an empty super placed on the parent hive?

ILLINOIS.

ANSWER.—Yes, your plan of returning is all right; but it would be better and easier to avoid the trouble of returning by preventing the afterswarm in the way that has been given so many times. Afterswarms are more ticklish things than prime swarms, and sometimes when you try to hive an afterswarm it takes into its head the foolish notion to take its departure, leaving you to gaze somewhat foolishly after it.

REPORTS AND EXPERIENCES

A Skunk and a Bee Tree

One day last March I started to my traps, and as I was walking along I saw a skunk track. I followed it and it led me by an elm stub 3½ feet in diameter and 12 feet high. The snow was packed down and I noticed a lot of little black specks on it. When I looked closer I saw they were bees' heads. The skunks had eaten the bees, all but the heads; also a small amount of broken comb was on the ground. The hole in the stub faced the east, and was about 12 inches in height, and by looking in I could see comb.

The skunk I was tracking had gone on. I followed it and soon got it; it yielded me $2 50. About a week later, as I was going by the stub, I had my ax, so I chopped into the tree to see if there was enough honey worth bothering with. I did not cut the tree down, but commenced chopping at the bottom a strip about a foot wide, and kept chopping until I had an opening as high as my head. All I could see was honey. I went home, hitched the horse to the cutter, took a wash-tub and boiler with me and filled them up; drove home again, got another tub and filled that full of nice white honey. I also got a potato crate full of empty combs which I made into wax and shipped it to A. G. Woodman. I sold the honey, three pounds, for 25 cents, and it brought me over $15 beside what I kept for my own use or gave away. I have cut lots of trees, but not one ever had as much honey as this one.

Riverside, Mich. ARCHIE KELLEY.

Publicity for Honey

It has been with much interest that I have followed all that has been said in both the American Bee Journal and other bee publications for some months past, about advertising honey. The interest seems to be growing, and from your issue of March 1, it seems that something definite may be done. The article, "A National Publicity Campaign for Honey," is a fine one.

In my very small way I have already learned the value of advertising. Three years ago, when I offered my honey in jars, the merchants gave me the laugh, saying the Cuban people did not eat honey; they have an idea it is not healthy, being too heating, and this idea is furthered by the physicians. I left a few jars where they would let me to be returned or paid for, and I never had any returned. Every chance I had, and I schemed in every way to make chances, I wrote something in our local papers about bees or honey, receiving more or less ridicule. Last year, as you know, I printed a small booklet called "Campanilla," in which I described my honey and methods of extracting and marketing. This I mailed to various addresses in Cuba and the United States. In this booklet I had, as you advised me, my prices high, but I am very glad I did. It places my honey on a higher plane than the ordinary.

My advertising in the United States has not brought me any great amount of business so far but scarcely a mail comes without something from someone about honey, where can it be had in the United States, or please give me some cooking receipts for honey, etc. To my belief, telling people how to use honey is away ahead of any other advertising

My jar business has increased steadily, and I had to buy 100 gross of empties to carry me through this season. This year I have sold in barrels my best honey at 72 cents per gallon, but as yet I have not enough local trade to consume it all. Yesterday I received a telegram from a firm in Cuba, "Ship me all the Nos. 32 and 12 jars you have." This firm sent me a check March 1 for $100 to settle for honey bought in April. What the jar business nets is easily figured; about four times the barrel price.

Holguin, Cuba. D. W. MILLAR.

Excluders

I am a farmer beekeeper and run mostly for bulk comb honey. I have a number of hives with supers, same size as lower bodies, in which I use the Hoffman frame. Last year is the first time I ran my hives in this way, *i e*, large super with frames in which to store the surplus, and was fortunate enough to escape without the queens going into the upper story. I did not use queen-excluders.

Now the question is: Will I fare this well every year? I would rather not use the excluders if they are not necessary, as I think to some extent they retard the bees from entering the upper story I only use strips or starters of foundation. As you are a large honey-producer, I would like to have your opinion as to whether or not there is much danger of the queens entering the upper story when running as I do for bulk honey? NATHAN CLAIR.

Mendon, Mo.

[If you were to use combs already built you would have brood in the upper story about half of the time, because the Langstroth hives are both too small and too shallow, even the 10-frame hives. The latter, however, are better than the 8-frame hives as they give more room to the queen in the lower story.

It is probable, however, that in running for chunk or bulk honey you will have but little trouble with the bees breeding in the upper story. You will find it to happen in seasons when the honey flow is irregular, because in such seasons the bees build comb to place the crop, and the bad weather causes them to empty a part of the cells. It quite often happens that the queen lays in the upper story at such a time. But whenever the season continues steadily to yield honey there is but little danger of the queen finding any room above if she happens to go there.

On the whole, however, if I were in your place, I would use queen-excluders. In our large hives, with deeper frames, and producing extracted honey, we do not use excluders. Once in a while only do we find brood in the supers.—EDITOR.]

The New Disease

The *new* bee-disease struck this locality the past season. The symptoms described in the bee papers apply here with one exception, namely, the abdomen does not swell; it *shrinks*, it becomes much smaller than normal.

It only attacks mature bees. In one colony of dark hybrids every mature bee was killed. They had built up strong, producing some surplus The disease disappeared with the last mature bee. It did not attack queens or drones.

I tried introducing queens and cells (in one colony), but they would not accept either. They seemed at first to be attacked by robbers, but upon closer inspection the apparent robbers proved to be occupants of the hive. Upon opening a hive the first thing to attract my attention would be healthy bees chasing diseased ones across the top-bars

They lose their down and become shiny black and greasy looking and smaller in size. Their wings become spread, and slightly raised and narrowed. They have this appearance before or about the time the healthy bees attack them. They do not seem to die directly from the disease; the life is hounded out of them by the other bees much the same as they kill drones At first I thought the weather had something to do with the cause and cure, it being very wet when it started, about June 1, and dry when they recovered, the last of June. But since then I believe the cure was in their killing every diseased and mature bee. Next season? GEORGE E. MORRIS

South Barre, Vt.

Paralysis

In my bee-yard there appeared a disease of the adult honeybee in three colonies last winter, and in other colonies in the spring and summer of 1915.

In the first three colonies almost every day there would be a few bees that would fly and drop in the snow, although it was too cold for bees to fly. A considerable number would have greatly swollen bodies and were full of fluids and had a greasy, shiny look. They looked like they had been in syrup or honey. Every day that was warm enough for flight, the bees carried out great numbers of bees that were daubed and swollen. When spring finally came these colonies were greatly depleted, and one was so weak that it was robbed out almost the first thing. Very soon I found two other colonies were affected in the same way. But as warm weather came on I noticed that the number of bees that had swollen bodies was much less, as was also the number with the shiny appearance.

But there were other characteristics dissimilar to those of winter time. There was great commotion all about the entrance and a considerable area of ground in front of the hive, a seething quivering mass. The colony spirit seemed to have changed from a desire to store honey to one of self-destruction. Many of the bees that were ejected looked as if nothing were the matter with them, but were unable to return to the hive. A peculiar thing about many of the ejected bees was that, contrary to the natural instinct of the bee to relieve the colony of her presence when disabled, they seemed to resist being ejected, would pull back. It reminded one of incidents on the police force, when it took two or three "cops" to put out one "drunk." So it looked like these sick bees did not know that they were diseased and resisted being ejected; but once out, being unable to return, lay with wings quivering. I assure you that it looks bad to the bee-lover to see his harvesters lying by the gallon in front of the hives in this condition.

During the season just passed I had eight colonies affected as described; all of them pure Italians. I had some hybrids and a few black bees in the yard, but none of them had this disease In this yard of 60 colonies, 8 were diseased. A part of them recovered enough to build up and store some honey from fall flowers; the others had to be supplied with honey for winter stores. All seemed to have recovered fully by late fall. Today (Jan. 22, 1916) we have had a fine warm day and the bees had a good flight after three weeks' confinement. To my surprise, I found three other colonies with the disease. They, too, were doing just as the others had done. These three colonies were not affected the past season, but did big work storing, and went into winter with abundant stores, strong in young bees and plenty of insulation.

During the past season I supposed that my bees had bee-paralysis, or is it that other disease of the adult bee, Isle-of-Wight disease or *Nosema Apis?*

I am sending some of the diseased bees to Dr. Phillips, of Washington, D C., for examination. I am very anxious to learn just what the disease is, and hope some correspondent will be able to give me light, and, if possible, a remedy. H. C. GADBERRY.

Miami, Mo.

[Mr. Gadberry's description is similar to that of the so-called "paralysis" which answers in practically all particulars to the maladies mentioned on pages 14 and 15 of the January number. Personally, we ascribe the trouble to the exceedingly wet season of 1915. As the climate of the Mississippi Valley is usually dry, there is probably no danger of such a scourge as they have had in England under the name of Isle-of-Wight disease, but the complaints are similar. Our columns are open to the discussions and suggestions of beekeepers and scientists on this matter.—EDITOR.]

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[Signed] M. G. DADANT, *Manager*.

Sworn to and subscribed before me this 3d day of April, 1916.

[SEAL.] R. R. WALLACE.
Notary Public.

My Commission expires Sept. 21, 1917.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

FINEST Italian Queens. Send for booklet. Jay Smith, 1159 DeWolfe St., Vincennes, Ind.

PHELPS' Golden Italian Queens will please you.

TWENTY-FIVE colonies of bees for sale.
G. W. Lindle, Muscatine, Iowa.

FOR SALE cheap 45 colonies of bees, extractor and other supplies. Write,
Mary Vernon, Carlyle, Ill.

FINE three-banded Italian queens. Circular and price list free. J. L. Leath,
Corinth, Miss.

TELL several thousand people what you have for sale with a few words in this department.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PHELPS' Golden Italian Bees are hustlers

QUEENS FROM THE PENN CO. See our large ad. elsewhere in this Journal.

DOOLITTLE & CLARK'S Italian breeding queens will be ready for delivery May 1, Prices, $10, $5.00, and $2.50. Marietta, N Y.

READY now 1-lb. 3-band Italian bees with queen, $1.65. 2-fr. nuclei with queen, $2.25.
Rosedale Apiaries. J. B. Marshall,
Big Bend, La.

RHODE ISLAND northern-bred Ital. queens, $1.00. Circular. O. E. Tulip, Arlington, R. I.

FOR SALE—Tested hybrid queens by return mail at 25c each.
Peter Schaffhauser, Havelock, N. C.

NORTHERN-BRED Italian queens of the E. E. Mott strain. June, unt., 90c; July, 75c. Send for free list. Earl W. Mott,
Glenwood, Mich.

VIGOROUS prolific queens, $1 00; 6 $5.00; June 1. My circular gives best methods of introducing. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

THREE-BANDED Italian bees, $1.00 a pound. Untested queen, 65c. Tested, $1.00. Select tested, $1.25. Rosedale Apiaries,
J. B. Marshall, Big Bend, La.

IF YOU wish to get early queens and combless packages place your orders early with the Marchant Bros., Union Springs, Ala. See our ad in May Journal.

FOR SALE—Bright Italian queens this season, 75c each; $8.00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

QUEENS from my honey-gathering strains will be ready to ship April 1st. In honey-getting qualities they have few equals. See my advertisement elsewhere in this Journal. D. E. Brothers, Attalla, Ala.

GOLDEN ITALIAN QUEENS Select tested, $1.25. Tested, $1.00. Untested, 70c; 12, $8.00. Select untested, 80c; 12, $9.00. Untested, July, 10c off each; $1.00 per doz. off. No foulbrood. D. T. Gaster, Rt. 2, Randleman, N. C.

QUIRIN'S superior northern-bred Italian bees and queens are hardy, and will please you. More than 20 years a breeder. Orders booked now. Free circular. Honeydew for bee food, 5c a lb. H. G. Quirin, Bellevue, O.

ITALIAN QUEENS, prompt service; queens mailed to purchaser in new style of introducing cage that is safe and sure. Bees from a one-frame nucleus to a carload. Write for price list on colonies, queens and nuclei. J. F. Diemer, Rt. 3, Liberty, Mo.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

FOR SALE—Bright Italian queens at 75 cts. each; $7.50 per dozen or $60 per 100. Ready April 15. Safe, arrival and satisfaction guaranteed. W. W Talley,
Rt. 4, Greenville, Ala.

FOR SALE—Fine Italian bees and queens. Untested, $1.00; 6 for $5.00; 12, $9.00; 100, $60. For prices on nuclei and pound bees see my big ad in this paper for April and May.
J. F. Archdekin, Bordelonville, La.

INDIANOLA APIARY offers bees and queens for sale. Untested, 75c. Tested, $1.25. Bees in 1-lb. packages, $1.00; 1-frame nucleus, $1 25. Add price of queen if wanted.
J. Warren Sherman, Valdosta, Ga.

FOR SALE—Good Italian queens, untested, 75c; tested, $1.00; nuclei, 2-frame, $3.00; 1-lb. package, $2.00; 2-lb. package, $3 00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1904 Park Ave., Little Rock, Ark.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

LEATHER COLORED "Nutmeg strain" of queens, $1.00; doz., $10. Tested, $1 50. Special price on large lots. Return mail.
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LEATHER COLORED 3-banded Italian bees. $2 25 for 2-lb. pkg. Untested queen, 75c Tested, $1.00 by mail. Safe arrival guaranteed. No diseases around here. Send your orders to C. H. Cobb, Belleville, Ark.

"QUEENS OF QUALITY" reared from a daughter of one of Dr. Miller's famous queens, $1.00 each by return mail. After July 1st, 75c each; $8 00 per doz.
J. Ivan Banks, Dowelltown, Tenn.

QUEENS—Improved 3-band Italians; bred for business; June 1 to Nov. 15. Untested queens, 60c each; doz., $7.20. Tested, 85c each. Safe arrival and satisfaction guaranteed or money refunded.
Sinking Creek Apiaries, Gimlet, Ky.

LET us send you price list and descriptive circular of our bees and queens, and if you will tell us what sized and how many packages you may want, we will be glad to write you what the express will amount to.
R. V. & M. C. Stearns, Brady, Tex.

GOLDEN ITALIAN QUEENS by June 1st. Untested, 75c or $4.00 per half doz.; $8.00 doz. Select untested, $1.00. Tested, $1.25 each or $7.00 per half doz.; $12 a doz. Breeders, $3 00 to $5.00 each. Purely mated guaranteed. Send for circular. J. I. Danielson,
Rt. No. 7, Fairfield, Iowa.

CARNIOLAN, golden, and 3-banded Italian queens. Tested, $1.00. Untested, 75c; 6, $4.20; 12, $7.80. ½-lb. bees, 75c; 1-lb. $1.25. Nuclei, per frame, $1.25. No disease; everything guaranteed. Write for prite list.
C. B. Bankston, Buffalo, Leon Co., Tex.

AN established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

GRAY CAUCASIANS—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1 00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. H. W. Fulmer,
Box 10, Andalusia, Pa.

FOR SALE—250 colonies of high grade Italians; fine location on virgin alfalfa at a bargain. New modern equipment, comb and extracted. New country, fine climate, and bee business developing rapidly. Splendid opportunity for energetic man.
A. W. F. Lee, Cordell, Okla.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons,
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FOR SALE—Three-banded Italian queens and bees from the best honey-gathering strains obtainable. Untested queen, 75c; 6, $4.25; 12, $8.00. Tested queens, $1.25; 6, $7.00; 12, $12. For select queens add 25c each to above prices. Queens in quantity lots or bees by the pound, write for prices.
Robt. B. Spicer, R.F.D. 181, Wharton, N. J.

HAVING secured breeders of Dr. Miller, we are offering daughters of his famous strain of Italians at the low price of $1.50 each. Queens of our own strain at 75c each. One pound bees, $1.50; 2-frame nuclei, $2.25 Full colony in 8-frame hive at $6.50; 10-frame, $7.50; 200 colonies for spring delivery at $6.00 each, 10-fr. hives. The Stover Apiaries,
Mayhew, Miss.

MULLIN'S Unrivaled Italian Queens. Gentle and prolific, three-banded, and one of the very best honey strains. After May 1st to July 1st, untested queens, $1.00 each; $9.00 per dozen. After July 1st, special rates. Three-frame nuclei with untested queen, $2.75. After June 1st try one; you will want more. Satisfaction guaranteed.
O. S. Mullin, Holton Kan.

CARNIOLAN GOLDEN and three banded Italians. One untested, 85c; 6, $4.80. Tested, 1, $1.25; 6, $7.20. Breeders, $4.00. Bees by the lb., $1.25 per lb. Nuclei, 1 fr., $1 75; 2 fr., $2 75; 3 fr., $3.50, without queen. Full colonies in A. I. Root hives with Hoffman frames with queen, 8-fr. hive, $7.50; 10-fr., $8 00.
D. L. Dutcher, Bennington, Mich.

QUEENS by return mail or your money back; guaranteed purely mated, 3-banded Italians, northern bred strain for gentleness, honey gathering and wintering. Select untested, $1.00 each; 6 for $5 00. Select tested, $1.75 each. Write for price on large orders. State inspection certificate. Satisfaction guaranteed. J. M. Gingerich, Kalona, Iowa.

A DAUGHTER of one of Dr. Miller's best honey queens and the Beekeepers' Review for 1916 for only $2.00. A daughter of one of the best honey getting queens selected from 1100 colonies worked for extracted honey, from the yards of E. D. Townsend & Sons, and the Review for 1916 for only $1.75. The queens will be mailed in June direct from our breeders in the South. A rare buy.

BEES AND QUEENS—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey gatherers. We breed this stock only. Untested queens 75c each; $8.00 per dozen; $60 per hundred. Tested queens, $1.25 each; $12 per dozen; $85 per hundred. Three frame nuclei, $2.25 each; $200 per hundred. Bees ½-lb. pkgs., 75c each; $60 per hundred; 1 lb. pkgs., $1.00 each, $85 per hundred. Add price of queens to above pkgs. Complete catalog free on application Spencer Apiaries Co.,
Nordhoff, Calif.

FOR SALE—24 colonies of Italian bees at $4.50 each; 20 colonies with mismated Italian queens, $4.00 each; 8 colonies of light-colored hybrids at $3.50 per colony; all from the J. P. Moore strain; all in 8-frame bodies in winter cases; mostly the Quinby standard full-depth self-spacing Hoffman frames, 8 to each hive; all combs straight, and all strong and healthy with plenty of honey; f. o. b. here. Wilmer Clarke,
Box 200, Earlville, Mad. Co., N. Y.

FOR SALE—36 colonies of bees in 8-frame hives; 50 supers full of frames and drawn comb; 30 brood-frames full of honey; 20 comb-honey supers and a lot of bait combs; 30 queen-excluding honey-boards; 10 Porter bee-escapes; 8 drone-traps; 100 new Hoffman frames not nailed; 100 or more other frames; 1 Cowan honey-extractor; 1 Doolittle wax-extractor; all of last year's wax and cappings Must all go in a lump. Sale here on the farm, 3½ miles from Livermore. At $200. S. C. Boyle, Bode, Iowa.

CARNIOLAN, Golden and Three-Banded Italian queens from April to October. Tested, $1.00 each; 6, $5 40; 12, $10.20. Select tested $1.25 each; 12, $13.80. Untested, 75c each; 6, $4.20; 12, $7.80. Select untested, 85c each; 6, $4.80; 12, $9.00. Breeders, $3.00 to $5.00, Virgins, 50c each; 6, $2.50; 12, $4 00. Bees, 1-lb., $1.25; 2 lbs. $2.25; ½ lb., 75c. Nuclei, 1 frame, $1.25; 2 frames, $2.25; 3 fr., $3.00. Full colonies with tested queens, 8 fr., $6.50; 10 frame, $7.00. No disease, safe delivery and satisfaction guaranteed. Money must accompany the order. Write for price list.
I. N. Bankston, Buffalo, Tex.

FOR SALE—35 colonies pure Italian bees with select tested queens of J. P. Moore strain, $4.50 per colony; 35 colonies with mismated queens from same strain, $4.00 per col.; 35 cols. light colored hybrids from the same strain with queens, $3.50 per col., all in 8-frame bodies in good winter cases, mostly the Quinby standard, full depth self-spacing Hoffman frames, 8 to each hive, all combs straight, and all strong and healthy with plenty of honey, f. o. b. here.
Wilmer Clarke, Box 200, Earlville, Mad. Co. N. Y.

FOR SALE—Three-banded Italian bees, 3 frame nuclei with queen, $3.00; without queen, $2 25. We have more bees than we can manage, and can, therefore, supply you with the biggest, strongest nuclei you will be able to find anywhere. Our bees are all on the standard size Hoffman frames, combs built on full sheets of foundation and wired frames. We are now shipping nuclei and can now fill your order promptly. Bees guaranteed to be free from disease.
Hyde Bee Company, Floresville, Tex.

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WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
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WANTED to buy a quantity of dark or amber baking honey. State price and source gathered from. A. G. Woodman Co.
Grand Rapids, Mich.

COMB HONEY our specialty. Highest market prices obtained; prompt returns made. Send us your shipments
Albert Hurt & Co., New Orleans, La.

NEW CROP of rich, white mesquite and catclaw honey. Bulk comb and extracted. Comb in two 60-lb. cans, 11c; in 6-10 lbs., 11½c; in 12·5 lbs., 12c. Extracted, 2c per pound less. C. S. Engle, Beeville, Tex.

FOR SALE—Extra good light amber mesquite and alfalfa honey. Two 60-pound cans to case, 5c a pound; 5 and 10 pound friction-top pails, 8c per pound per hundred weight. Cash with order on board of cars here.
B. A. Hadsell, Buckeye, Ariz.

FOR SALE — Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

FOR SALE

FOR SALE—200 colonies of bees, 5 acres of land. N. L. Anderson, Spearfish, S. Dak.

HOMESTEAD, SCHOOL, State Lands suitable for poultry, fruit, bees. Booklet, 10c stamps.
Joseph Clark, Sacramento, Calif.

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HONEY LABELS that create a favorable impression on the buyer. Dealers admire them and give them prominence. Catalog Free.
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METAL TOP covers, T supers; all new, to exchange for honey. Goldenrod Apiary,
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GOOD second hand 60-pound cans, 25c per case of two cans f. o b. Cincinnati; terms cash. C. H. W. Weber & Co., Cincinnati, O.

FOR SALE — Good second-hand 60-pound cans, 25c per case of two cans, f. o. b. Chicago. Cash with order. E. H. Bruner,
3836 North Kostner Ave., Chicago, Ill.

FOR SALE—10 new 10-fr. dovetailed 1-story hives, nailed and painted white two coats at $1.35 each; G. B. Lewis make.
Fred H. May, Meredosia, Ill.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

NOTICE—Beekeepers when in need of supplies write us for prices We can save you money. We make a specialty of odd sized hives. The M. C. Silsbee Co.,
Cohocton, Rt. 3, N. Y.

FOR SALE—Medium brood foundation, one to ten lbs., 52c per lb. Up to 25 lbs., 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana. Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade.
J. F. Archdekin, Bordlonville, La.

FOR SALE—150 Alexander feeders, 12c each, used one season. $16 cider mill, $8.00. 800 wire moving screens, strong frame, 600-8 fr., 4c; 200-10 fr., 5c. 4-90 gal. honey tanks, used one season, $6.00 each. New $70 Reflex camera, $55. An Eastman 4x5, 18 in. bellows, cost $32, $15. 100 8-fr. hive bodies, painted, frames wired, 50c each. Empty 60-lb. cans, 2 in a case, 40c each. Will sell for cash or will trade for honey, or bees in two-pound packages Wesley Foster, Boulder, Colo

SECTIONS $2.85 per thousand. The Beekeepers' Review is making a lead on sections and furnishing their subscribers with *any make you prefer* at from $2 85 to $4 50 per M. Order the same make of section as usual, but do not send us but $4.50 per M. for the No. 1 grade and 50c less for the No 2 grade. One make can be furnished as low as $2 85 per M. for the No. 2 plain. *Do not buy a single supply* for the bees without first investigating our cooperative plan of buying. Write your wants to the Beekeepers' Review, Northstar, Mich.

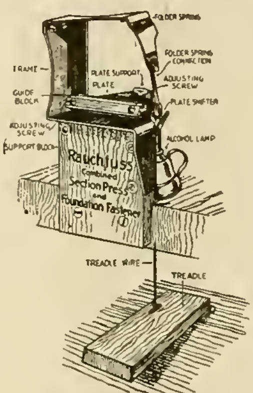
DEER HEADS nicely mounted. Will trade for bees. O G. Mills, Bayfield, Wis.

HATCH WAX PRESS almost new, $3 50.
Ed Swenson, Spring Valley, Minn.

KODAK work finished and mailed in 12 to 24 hours. Send for sample and free booklet, "How to Make Money With a Kodak."
Webb's Kodak Studio, Morganton, N. C.

FOR SALE—Indian motor cycle, $60. Deering mower, excellent condition, $15. 400 potato sacks, 3c each. 30 seamless bags (new) 20c each. Will trade for honey.
Wesley Foster, Boulder, Colo.

Make More Profit by Reducing Cost of Production



Comb-honey producers can put up their sections complete in less than half the time with a **Rauchfuss combined section-press and foundation fastener.** Now used by hundreds of Western beekeepers who would not think to be without it any more.

It is guaranteed to do more and better work than any other device on the market. Your money back if not entirely satisfactory. Made for 4¼x4¼ and also for 4x5 sections.

Price, $3.00 complete with lamp and treadle, delivered, postpaid, anywhere in the United States. Write for 68-page illustrated catalog of the best Bee-supplies made.

THE COLORADO HONEY PRODUCERS' ASSOCIATION
1424 Market Street, Denver, Colorado

"Our Bees are Gentle"
Nope, you won't get stung if you buy our Queens

Our queens are very prolific; great hustlers; bees swarm but little, and are of a beautiful light leather color. Our Queen Booklet tells how to rear the finest queens. It is free for the asking. Prices from June 15th to Sept. 1st.

QUEENS

One, $1.00; six, $5.00; twelve, $9.00.

Bees by the Pound

½ lb., $1.00; 1 lb., $1.25; 2 lbs., $2.00; 3 lbs., $2.50.

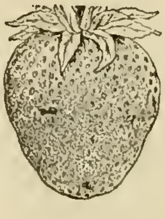
Nothing but select queens sent out.

Address, JAY SMITH
1159 DeWolfe Street, Vincennes, Indiana

ITALIAN QUEENS—THREE BANDED

From June 1st until Nov. 1st, only 75c each; 6, $4 00; 12, $7.50. Tested, $1.00; 6, $5.00; 12, $9 00. Of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey-gatherers. Send for my free circular and price list, and see the natural conditions under which my queens are reared.

JOHN G. MILLER
723 C Street, Corpus Christi, Texas



4 MONTHS FOR 10c
Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions.

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

THE KRETCHMER MFG. CO. COUNCIL BLUFFS, IA. MANUFACTURERS OF
THE MASSIE PATENT
DOUBLE WALLED BEE HIVE

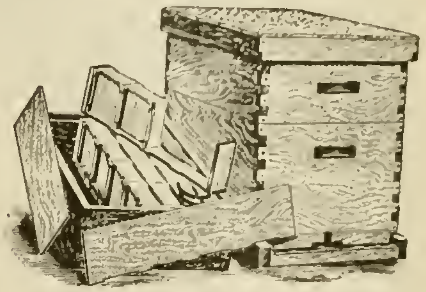
THE MASSIE HIVE
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames Made from White Pine

THE VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee supply business has shown us that the **Massie is the very beat hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

WHY NOT GIVE US A TRIAL ORDER? SATISFACTION FULLY GUARANTEED EARLY CASH ORDER DISCOUNTS

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 1100 3d St., Council Bluffs, Iowa

GOLDEN ITALIAN QUEENS

If you care to know what others think of this strain of Goldens, read these two letters from satisfied customers—

NAMPA, IDAHO, Feb. 12, 1916.
MR BEN G. DAVIS, Spring Hill, Tenn.

Dear Sir:—Yours at hand, and in reply will say you may book me for 200 untested queens, will give you dates later to ship. No, Mr. Davis, I do not care to part with the queen this season, but I think another season I shall send her in and probably one or two others and have you breed from them for me. The surplus was 250 pounds, comb honey, besides I drew four cards of brood from them. They cap their honey white. She is quite yellow and fair size. The workers are yellow and well marked and uniform color; drones extra yellow. Yours respectfully, L. C. McCARTY.

(The above queen is a Golden from my apiaries.)

RENO, NEV, April 16, 1916.
MR. BEN G. DAVIS, Spring Hill, Tenn.

Dear Sir:—I have tested out several of your Golden Queens by the side of several leather and three-banded stock from seven or eight breeders in the last two years, and find your stock **superior to any** of the darker races in resisting and curing European foulbrood, and find them gentle, good winterers, and the equal of any for getting honey. Yours very truly,
Rt. 1, Box 40, M. W. HARVEY.

Safe arrival (U. S and Can.), purity of mating, and satisfaction guaranteed.

PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	11.00	18.00

Breeders, $5.00 to $25.00

BEN G. DAVIS, Spring Hill, Tennessee

Sweet Clover Seed

QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu. 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22.50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

OUR TEXAS BEES

Having locations where I can rear bees almost the year around. I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, $1.50; 2-pound packages, $2.50; 10-pound lots, $13; 100 pounds for $120. Queens shipped with pound packages at 75 cents each. By mail at $9.00 per dozen. Special prices to dealers in large lots.

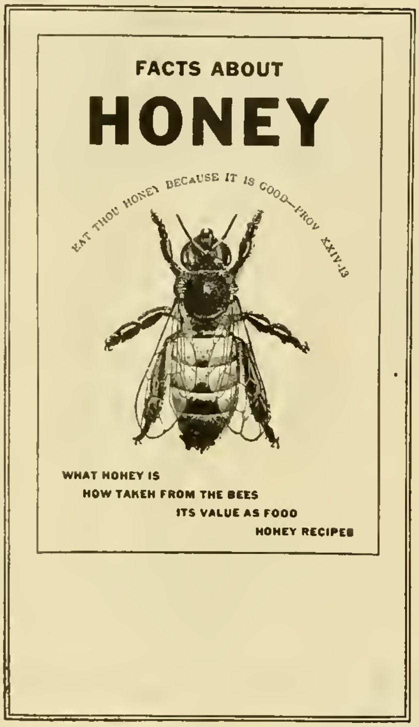
WM. ATCHLEY, Mathis, Texas
"The Texas Beeman"

WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.00.

G. W. Wright Company, Azusa, Calif.

FACTS ABOUT HONEY



FACTS ABOUT

HONEY

EAT THOU HONEY BECAUSE IT IS GOOD—PROV. XXIV-13

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the "Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra -	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " " -	9.00
30 " " -	.75	2000 " " " -	17.00
50 copies, postage extra -	.75	5000 " " " -	40.00
100 " " " -	1.25	10,000 " " " -	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

American Bee Journal, - - - - - - - Hamilton, Illinois.

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

THERE OUGHT TO BE QUALITY HERE

"We are furnishing Kennith Hawkins, the 'Quality Hill Queen' Breeder, one of our 'Queens of Quality,' and will offer queens from one of The Review mothers crossed with his 'Quality Hill' Drones for 1916. We do not think one can make a mistake in buying this stock." No buyer of 24 or more Queens for delivery after June 15, can afford not to ask for our special discounts on these great honey gatherers.
The Review, Dec., 1915 This Townsend breeder exceeded the average of 1100 colonies by over 500 per cent last year. Sure will be quality here. These excellent honey queens 1, $1.00; 6, 5 00; 12, 9.00 until June 1. Later, 1, 75c; 6, $4.00; 12, $7.50. Write for booklet on Quality Hill Queens.

KENNITH HAWKINS, PLAINFIELD, ILLINOIS

START THE SEASON RIGHT

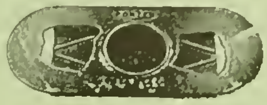
By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE



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HONEY
TIME
MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

FREEMAN'S FARMER North Yakima, Wash.
Successor to Northwest Farm and Home
69 YEARS OLD
If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.
J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST

BEE SUPPLIES

Best Sections, Best Shipping Cases
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

Queens and Bees
FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5 00 each. One pound package bees, $1.25; 25 packages, $1 00 each; 2-pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25, each; 25 packages, $2 75 each.
Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

WHEN ORDERING SUPPLIES

Remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and G and Trunk Prompt service and no trucking oills.

THE A. I. ROOT CO., Mechanic Falls, Me.
J. B MASON, Manager

BECAUSE IT LASTS

That is One Argument in Favor of Cypress as a Beekeeper's Lumber

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

There are many qualities that make the value in lumber depending, of course, on the uses to which they are put. But of all virtues that of **endurance** comes first. The wood that resists rot influences longest, especially when the wood is used in a service by which it is exposed to wet and dry conditions and earth-contact—that wood is accredited with being able to give the user the greatest INVESTMENT VALUE.

No use tries the lasting qualities of lumber greater than that of Bee Hive construction. It is the very duce to get lumber that will not too readily rot—unless one gets Cypress lumber. Then there is a good show for endurance that means **real money saved on Repairs You Don't Have to Make.** Try it, Mr. Beekeeper.

STUDY THE WOOD QUESTION

There's one way to get at this matter of endurance—through books of authority. Such are the 41 volumes of the internationally famous Cypress Pocket Library. These books are not "advertising"—they are authoritative references on file in the libraries of scores of technical schools and National institutes. Ask for Vol. 1 to start with; it contains the complete U. S. Govt. Rept. on Cypress, "The Wood Eternal," and a full list of the other volumes; then branch out until you cover the subject.

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., and
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

EARLY-ORDER DISCOUNTS ON

DADANT'S FOUNDATION

Send us a list of the bee-supplies and foundation you will need for 1916, and we will gladly quote you our best prices.
It will pay you to buy early.

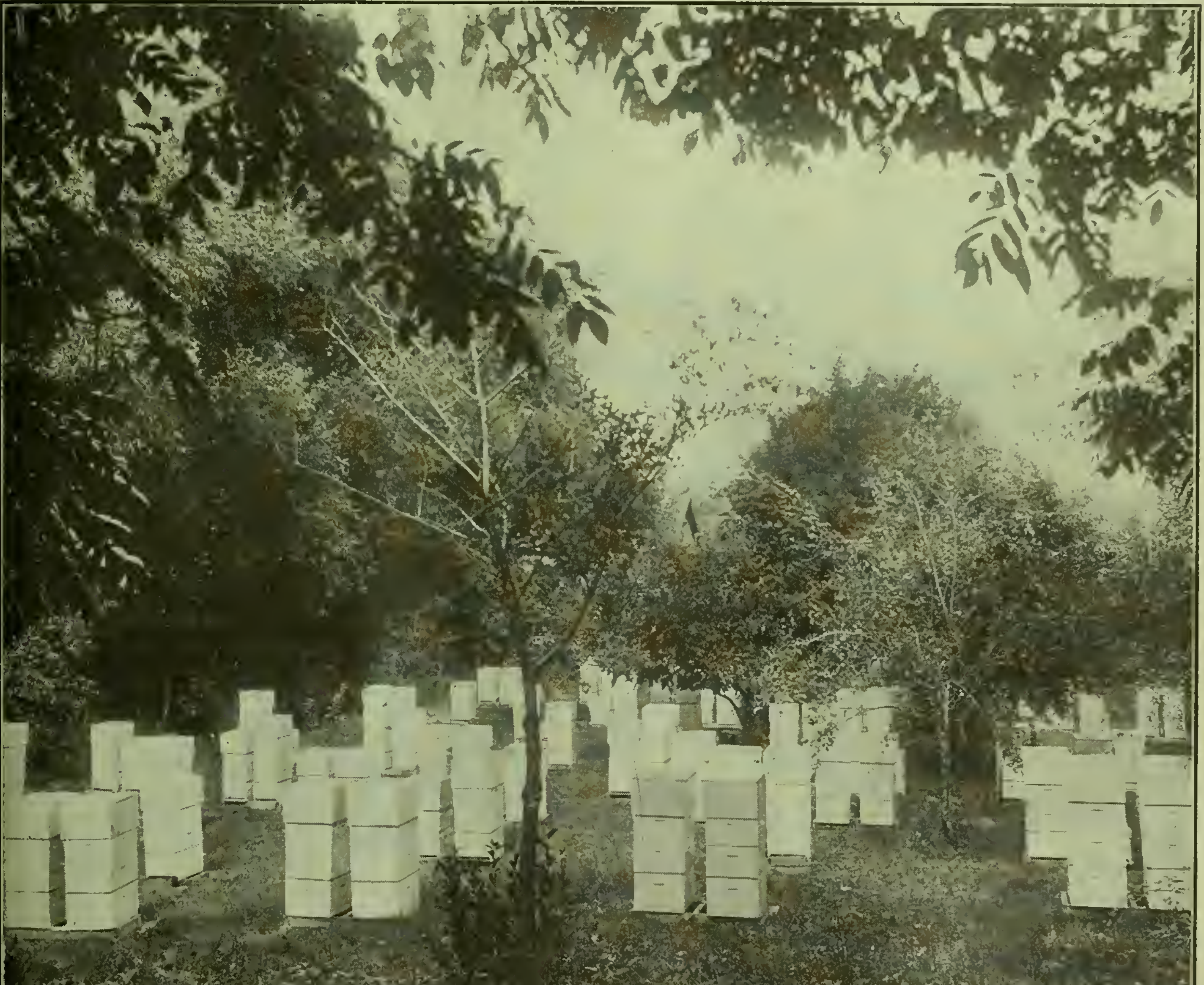
BEESWAX—We buy beeswax the year around and pay highest cash and trade prices. Light yellow wax from cappings is especially wanted. Your BEESWAX worked into foundation at moderate rates.

NOTE Old combs cappings, and slumgum rendered on shares. Send for our terms. We will get all the wax and save you a "mussy" job.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

JULY, 1916



Results of White Clever in the Apiary of E. L. Hofman, at Janesville, Minnesota

BEES AND HIVES

If you are in need of supplies or bees shipped promptly, write us. Our stock is complete, no delays. Chaff and single walled hives. Bees by the pound, nucleus or full colonies. Untested queens, $1.00. Tested, $1 25. Catalog free.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

SWEET CLOVER

Unhulled and Scarified Hulled
WHITE SWEET
CLOVER
YOUNG-RANDOLPH SEED CO., OWOSSO, MICH

Bee-Supplies

LET US FIGURE WITH YOU

We know we can satisfy you on quality. Write for catalog.

C.C.CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

WE ARE READY

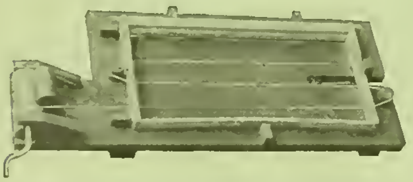
To figure on your wants. Send us a list of goods and we shall be pleased to quote you the very lowest price for the best goods. Established 1899. Our catalog may interest you.

H. S. DUBY & SON, St. Anne, Ill.

Northern Bred
Italian Queens

More hardy than Southern bred. Try them once. Untested, $1.00. Sel. tested, $1.50. Plans for beginners, "How to Introduce Queens and Increase," 25 cents.

E. E. MOTT, GLENWOOD, MICH.



WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2 00.

G. W. Wright Company, Azusa, Calif.

OUR TEXAS BEES

Having locations where I can rear bees almost the year around. I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, $1.50; 2-pound packages, $2 50; 10-pound lots, $13; 100 pounds for $120. Queens shipped with pound packages at 75 cents each. By mail at $9.00 per dozen. Special prices to dealers in large lots.

WM. ATCHLEY, Mathis, Texas
"The Texas Beeman"

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi
Representatives of The A. I. Root Company, and Queen Specialists.

Watchful Waiting Causes You to Get Left

So Buy your Bee Supplies Now.
Promises to be a Honey year. Ship on day of receipt of order.
Lewis' Beeware—finest in the world.
Send for our 1916 Catalogue.
We do Beeswax rendering. Ship us your old Combs and Cappings. Write for prices.

THE FRED W. MUTH CO.
204 Walnut St. THE BUSY BEE MEN. CINCINNATI, O.

SAFETY FIRST

You are always safe in buying Murry's bees and queens. Unexcelled for prolificness, gentleness and honey-gathering qualities. No disease. Health certificate with each shipment of bees and queens. Three-banded Italians. Goldens.

Queens	May 1st to Nov. 1st 1	6	12
Uutested	$ .75	$4 00	$ 7.50
Tested	1.25	6.50	12.00
Select tested	1.50	8.00	15.00

Untested queens per 100, $62 50

I operate about 500 queen-mating nuclei, besides some 300 colonies in outyards, and ship by return mail. For prices of bees by the pound and nuclei, see April and May issues of this Journal.

H. D. MURRY, MATHIS, TEXAS

Beekeepers' Supplies

Such as Winter Cases, Hives, Sections, Covers, Bottoms, Bodies, Supers, Brood-frames of every description, Shipping-cases, Section-holders, Comb-foundation, Smokers, etc.

Get my prices before placing your orders.

R. H. SCHMIDT
Rt. 3, Sheboygan, Wis.

EVERY FRUIT GROWER

Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

BETTER FRUIT

and begin with the January issue, our Special Spraying Annual. Subscription price $1.00 per year in advance.

BETTER FRUIT PUBLISHING COMPANY
Hood River, Oregon

Forehand's ITALIAN QUEENS

Gentle, good honey-gatherers, bred for business. Their mothers were imported—the best to be had. If you buy once you will buy always. Just look at these prices. Where can you find better?

July to October 1

	1	6	12
Untested	.50	in any quantity	
Select untested	.75	$ 4 25	$ 8.00
Select tested	$2.00	11.00	20.00

We guarantee that all queens will reach you in good condition to be purely mated, and to give satisfaction. All orders filled at once.

L. L. FOREHAND
Fort Deposit, Alabama

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. The best all-purpose bee.

H. W. FULMER
Box 10, Andalusia, Pa.

BEEKEEPERS' SUPPLIES

Sold at a reduction. Best sections, dovetail hives, foundation, and all goods for the beekeeper. Second-hand 60-lb. cans, like new, 25c per case. Give me a trial order.

PRICES FREE

W. D. SOPER
325 South Park Ave., Jackson, Mich.

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

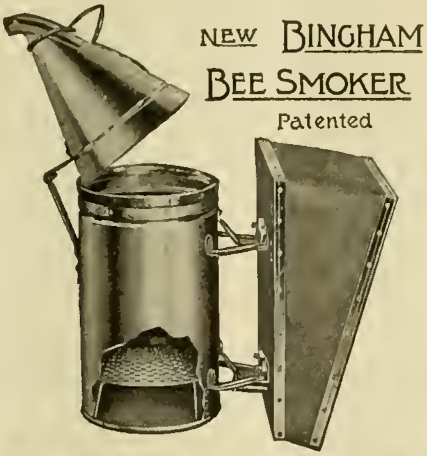
CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

A B C & X Y Z of Bee Culture, by A. I. Root.—Over 700 large pages describing everything pertaining to the care and management of the honey-bees. It is a veritable encyclopedia on bees. 400 engravings. Bound in cloth, and subjects arranged alphabetically. This book has a very large sale everywhere. Price, postpaid, $2.00, or with the American Bee Journal, both for $2 50.

A FINE untested Italian Queen for 60c. Tested, $1.00. Satisfaction guaranteed.

J. F. ARCHDEKIN
Bordelonville, La.



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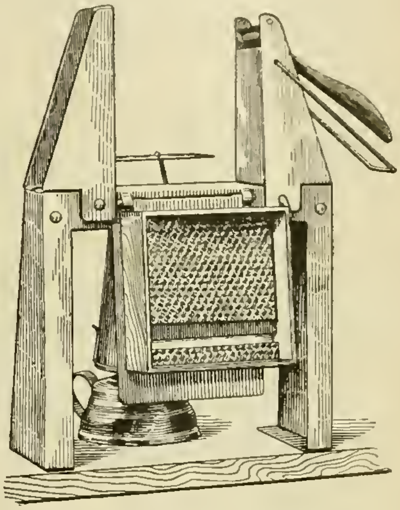

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When you order queens from us, you get QUALITY, PURITY AND HONEY GATHERERS. We can fill your orders from our famous Honey Gathering Strain for Queens, Nuclei and Full Colonies promptly, and guarantee safe delivery and entire satisfaction to you in every respect. Our aim is to give you the best stock on the market at the time you want it. Write for special price on orders of 50 or more. We ask you to give us a trial and let us prove to you that our stock is unexcelled by anything on the market.

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	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00

Tested Breeding Queens, $5.00 and $10 each.

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These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

PRICES.—Our regular price is $1.50 in June and $1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for $1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

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American Bee Journal

TENNESSEE-BRED QUEENS

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	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1 50	$ 7 50	$13 50	$1 25	$ 6.50	$11 50	$1.00	$ 5.00	$ 9 00	$ .75	$ 4 00	$ .75
Select Untested .	2.00	8 50	15 50	1.50	7.50	13.50	1 25	6 50	12.00	1 00	5.00	9 00
Tested............	2 50	13.50	25 00	2 00	10 50	18 00	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested....	3 00	16 50	30.00	2.75	15 00	27.00	2.50	13 50	25.00	2.00	10 00	18.00

Bees by the pound 1 lb., $1 25; 2 lb., $2.25; 3 lb., $2.75.
Nuclei (no queen) 1 fr., $1 50; 2 fr., $2.15; 3 fr., $2 75; 4 fr., $3 50; pure 3-band Italians.
Select queen wanted, add price.

Capacity of yard, 5000 queens a year—Select queen for breeding, $5.00
The very best queen for breeding, $10.

Queens for export carefully packed in long distance cages, but safe delivery not guaranteed

LONGMONT, COLO., June 20, 1916

I had ten of your queens in 1913 that finished 100 supers—one is doing good work now for her age.

A. J McCARTY.

JOHN M. DAVIS, SPRING HILL, TENN.

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ITALIAN BEES
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One sel. tested queen	1.60
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One comb nucleus, no queen....................	.90
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TESTED QUEENS BY RETURN MAIL
$1.00 each

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Untested queens early in April. $1.00 for single queen; $9.00 per dozen.

J. W. K. SHAW & COMPANY
Loreauville, Louisiana

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HONEY AND BEESWAX

CHICAGO, June 17.—There is very little movement in honey, either extracted or comb. The stocks of both are ample for all demands, prices remain about as recently quoted, there being no large sales to quote from. R. A BURNETT & CO.

KANSAS CITY, MO., June 17.—The honey market remains about the same. There is very little old honey left on this market. We believe that the new honey—when it comes in—will sell at around $3 50 to $3.75 per case. Extracted honey is cleaning up very rapidly, and while prices are no higher, there is a considerably firmer feeling to the market. Prices range from 6c a pound for dark amber to 7c a pound for lighter honey. There is no white extracted on this market.

C. C CLEMONS PRODUCE COMPANY.

DENVER, Colo., June 17.—We have nothing to offer in comb honey at the present time. We are selling extracted honey in a jobbing way as follows: White, 8½@8¾c per pound; light amber, 8@8¼c per pound, and amber, 7@8c per pound. We pay 26c per pound in in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.

THE COLO HONEY PRODUCERS' ASS'N
F. Rauchfuss, *Mgr.*

SAN ANTONIO, June 15.—The demand is good for bulk comb honey, but little trade for extracted. The south Texas crop is larger than normal, and of very good quality. Prices have had a tendency to shrink under the heavy offerings. Wholesale prices on bulk comb honey is steady at 9c basis, extracted according to quality at 6@7½c.

Beeswax is in good demand at 25c cash and 28c exchange. SOUTHWESTERN BEE CO.

LOS ANGELES, June 18.—The market at present on honey and wax is as follows: Water-white sage, 7½c; white sage, 6½c; light amber sage, 5½c; light amber alfalfa, 5¼c. All in straight carload lots f. o. b. shipping point. Choice country beeswax 27c per pound. HAMILTON & MENDESON.

NEW YORK, June 18.—Old crop of comb honey is now pretty well cleaned up with the exception of some off quality, odds and ends for which there is practically no demand. New crop from the South is now beginning to arrive, and No. 1 white stock selling around 14c; in some instances 15c; while off grades sell accordingly lower as to quality. We have nothing new to report as to the market on extracted. There is a fair demand at unchanged prices with liberal supplies. Beeswax steady at 30@31c.

HILDRETH & SEGELKEN.

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Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions.

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

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Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

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WHY IS THIS TRUE?

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Because LEWIS SECTIONS are polished on both sides on a double surfaced sanding machine which was designed in the Lewis plant especially for this purpose.

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Insist on the Lewis Sections Look for the Beeware Brand

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AMERICAN
BEE JOURNAL

Vol. LVI.—No. 7 HAMILTON, ILL., JULY, 1916 MONTHLY, $1.00 A YEAR

Importance of Full Sheets of Foundation in the Broodnest

Some Observations on Losses in the Average Apiary Because of Neglect to Secure Good Combs

—By Our Staff Correspondent

ONE of the things to be impressed upon the writer as a result of his work as a bee inspector, is the enormous losses among the beekeepers generally from rearing useless drones. It is not uncommon in neglected apiaries to find hives with from one third to more than one half drone comb. In some apiaries where good equipment is used and fairly good practice followed otherwise, this fault is still common. It is very evident that the owners of such outfits cannot realize the great cost of rearing such large numbers of loafers in the hives where they should be producing a profitable working force, otherwise such conditions would not be tolerated.

It requires as much food and attention from the nurse bees to rear drones as workers, and drones will continue to be a tax on the colony when mature, as they are consumers and not producers. It will readily be seen that a colony that is raising twenty-five percent or more of drones, will seldom yield a satisfactory profit to the owner. At the last Iowa convention, C. E. Dustman had an interesting paper on drones. He estimated that a square foot of drone cells would produce more than two thousand drones, while the same amount of space would produce more than three thousand workers. [Drone comb over 5,000; worker comb over 8,000.—E.]

The writer has often found it hard to convince the novices of the full value of full sheets of foundation. The first cost looks big to them, and they prefer to let the bees build their own combs with a narrow strip to insure that they will not be built crosswise. To show something of the habit of the bees, we have gone to considerable trouble to get a series of pictures that show the real condition more clearly than any amount of description. The impressions on the foundation being exactly the shape and size of worker cells, the bees will build most of the cells of this size where the foundation is used. Drone cells, being larger, require less wax in the construction of an equal amount, and probably less labor as well. This being the case wherever worker cells are not needed for immediate use to meet the needs of the queen, drone cells will be built, for they serve as well for storing honey. Figure 1 shows an ideal comb attached to all four sides of the frame and composed entirely of worker cells, most of which contain sealed brood. Such a comb can be used anywhere, whether for a brood comb or an extracting comb. Figure 2, shows a comb which is composed mostly of drone cells, as the result of using a narrow starter instead of a full sheet of foundation. The high arched cappings show that many of these cells contain drone brood. The cost in honey necessary to raise a single brood of drones, in such a comb, would pay for a full sheet of foundation. This comb can be used as an extracting comb, but is a nuisance, since if it chances to get into the brood nest, a lot of drones will be the result. Usually it will pay to melt up such combs at once and replace them with full sheets, rather than risk getting them used in this man-

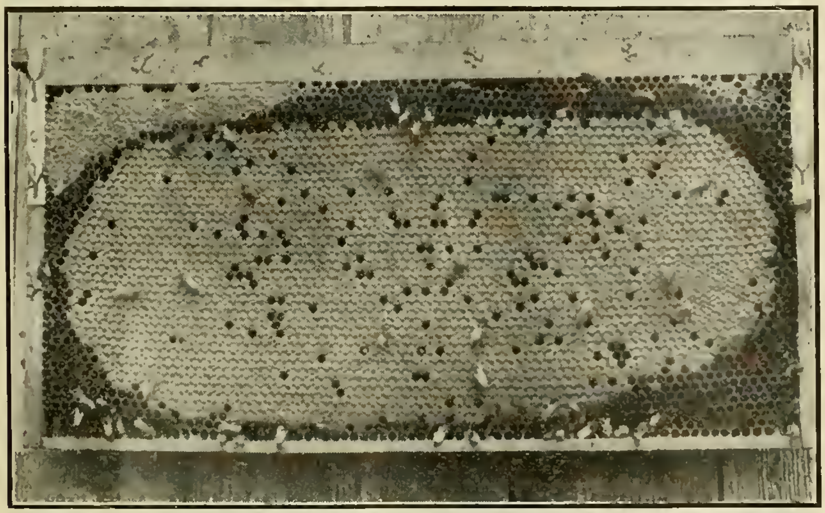
FIG. 1—FRAME OF SEALED WORKER BROOD AS A RESULT OF USE OF FULL SHEETS OF FOUNDATION

ner.

Aside from the drone cells, there is also much difficulty in getting smooth combs all the way down, with narrow starters. Figure 3 shows such a comb that is not only composed mostly of drone cells, but also is so uneven as to be a bother in uncapping or manipulating.

The bees will always build some drone comb in the best regulated hives and a small amount is not objectional. A few drones are necessary, of course, to fertilize the young queens that emerge during the season, but there is little danger that there will ever be a shortage for that purpose under normal conditions. Figure 4 shows how the bees will build small clusters of drone cells at the ends and corners of full sheets of foundation. Most of the surface, however, is occupied by worker brood.

If combs are damaged in any way the tendency is always to repair them with cells of the larger size. Mice are fond of gnawing the combs, and where the entrances are left large enough in winter, they are likely to enter the hive and cause a lot of damage. Figure 5 shows an extracting comb that has been injured by these little animals. If the injury is slight, as in this case, it will not pay to destroy the comb. However, it is likely to be repaired in the same manner as was the one shown at Fig. 6. Figure 7 shows another that has been repaired with the larger cells and utilized by the queen so that at the time the picture was taken the repaired portion was filled with sealed drone brood.

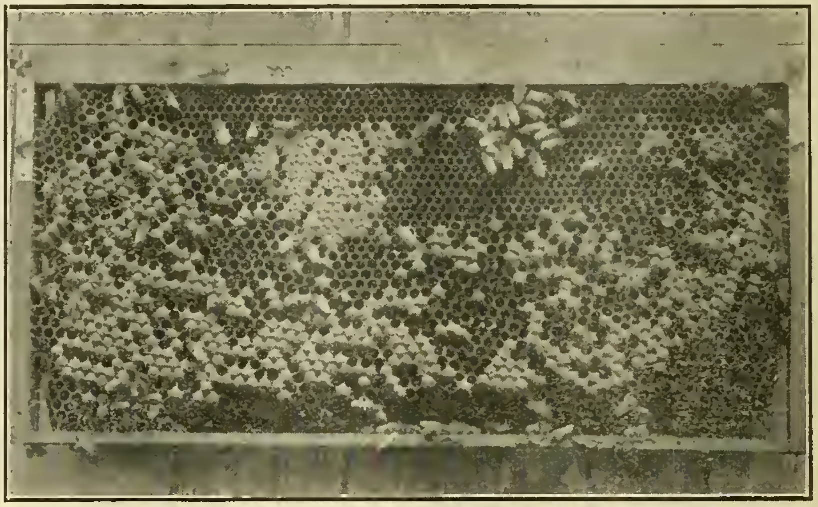

FIG. 2.—FRAME WHICH CONTAINS MOSTLY DRONE-BROOD—RESULT OF NARROW STARTER

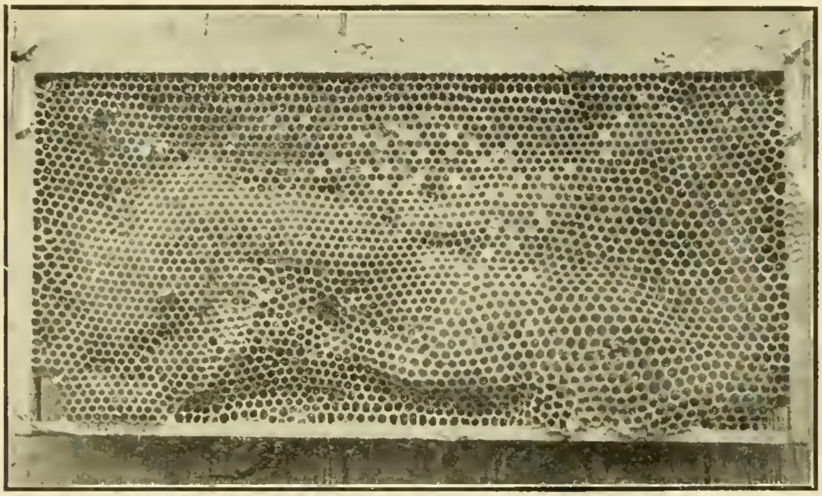

FIG. 3.—COMBS BUILT WITH LESS THAN FULL SHEETS NOT ONLY CONTAIN MUCH DRONE-COMB, BUT ARE IRREGULAR AS WELL

I am convinced not only that it pays to use full sheets of foundation, but also, that without it honey production can never be profitable. That I practice what I preach is evident by the fact that I am just finishing putting in 1200 full sheets for use in one small apiary, in replacing discarded combs and providing reserve extracting combs.

The use of full sheets of foundation in the sections is also much more common than formerly. The sections are occupied so much more readily, drawn so much quicker and filled so much more evenly that there is no question of the economy of full sheets in the sections. However, the use of full sheets in the brood nest is a vital matter, for without a large working force, big crops can never be harvested. The rearing of several thousand worthless drones, to consume the honey, take the attention of the workers and get in the way generally, does not tend in this direction.

More Bees or Greater Intensity?

ARTHUR C. MILLER.

THE question has been put to me as to whether we should work for decreased cost of production or increased per colony yield? It is a good question, and is one which every producer should ask himself and ultimately will have largely to decide for himself.

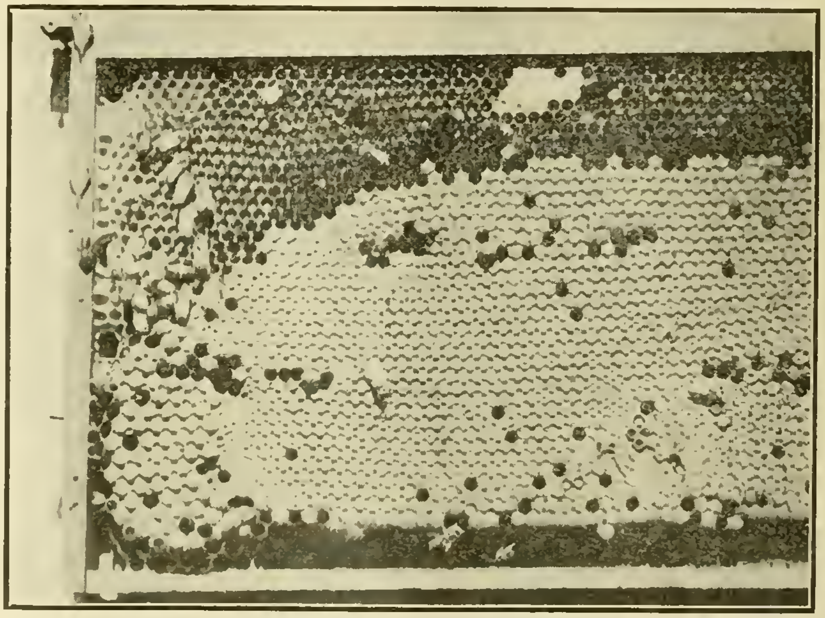

FIG. 4.—DRONE-CELLS IN LOWER CORNER BUILT ON FULL SHEETS

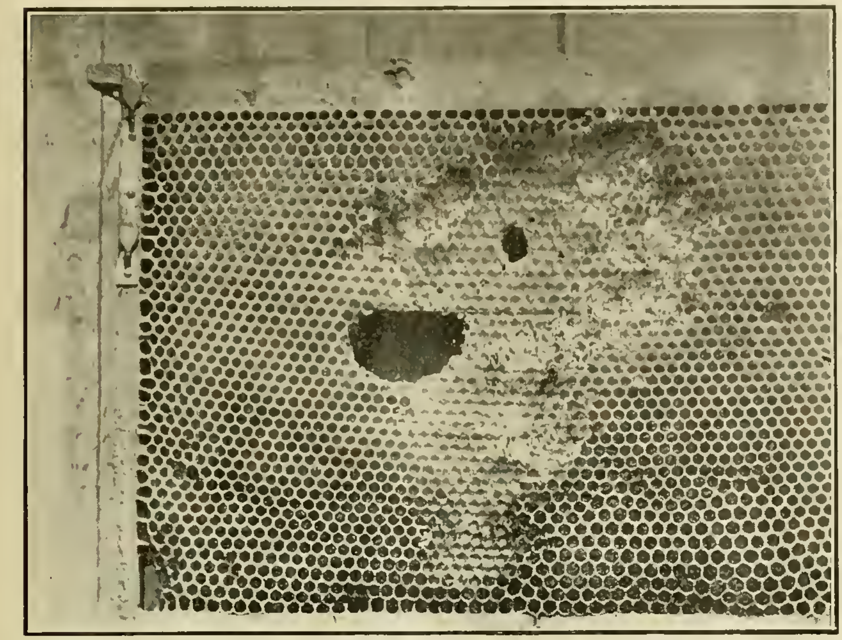

FIG. 5.—HOLE IN BROOD-COMB GNAWED BY MICE

harder the bees he has or keep more bees? The second man must either push harder or maintain present average with less labor.

The relation of equipment to cost of operation is a delicate one. It is easy to put too much money into equipment and it is equally as easy to add materially to one's labor by insufficient or poorly made and ill-fitting apparatus. There is a fine field for the exercise of good judgment in the matter of equipment.

Taking the case of the specialist and granting a well chosen equipment, can he sufficiently increase his per colony yield by different or increased manipulation to pay for the labor, or will he make more money by using less manipulation and putting his time into caring for more bees? Will he make more by investing more, hiring more help and generally spreading himself, or will he do better to devote every possible moment to just what bees he can care for himself?

Dr. Miller and Miss Wilson are shining examples of what may be accomplished by the intensive method, but the cost of securing those results they have not given.

The conventions and the bee-press have always devoted most of their time and space to manipulation and apparatus. To prove that these have brought progress it is scarcely necessary to compare present per colony yields with those of box-hive days. But the *cost* of manipulation has been ignored and that of the apparatus not considered as broadly as it should have been. Perhaps times are changing with us and we shall come to consider the interrelation of capital, apparatus and labor.

Before entering on the discussion of lowered cost *versus* increased yield (which are in a sense synonymous), it were well if we differentiated between those who depend on bees for all or a large part of their living and those who keep them as a side line. The first man must decide whether he shall put in more time on his present outfit or more capital in equipment for more bees; in other words, shall he push

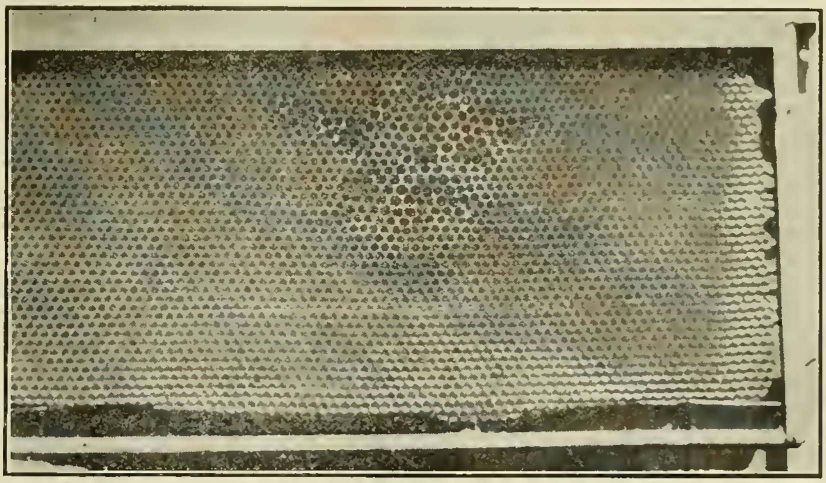

FIG 6.—DAMAGED COMB REPAIRED WITH DRONE-CELLS

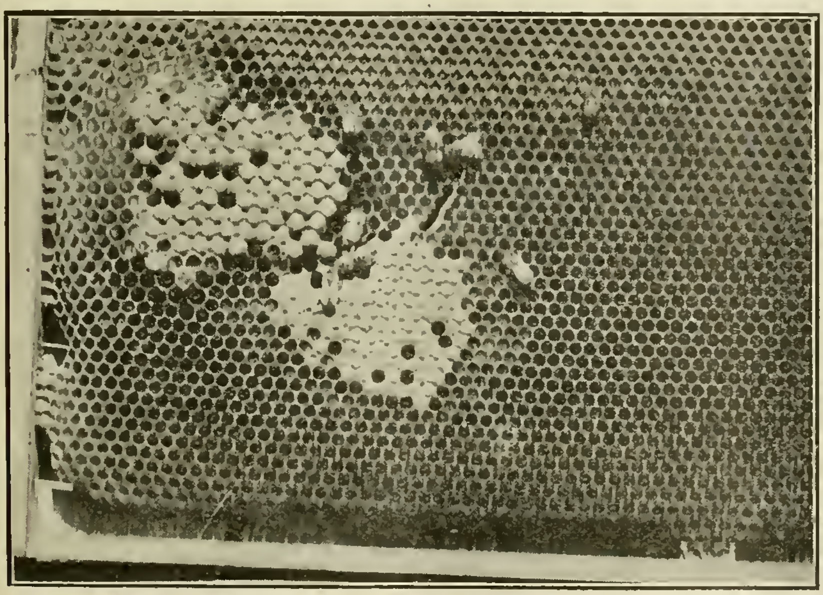

FIG. 7.—DRONE-CELLS WHERE A DAMAGED COMB HAS BEEN REPAIRED

The chains of apiaries run by some of the New York beekeepers and the big apiaries in the far west, both run on the "hustle and finish" plan, are good types of the other method; but here also we have no figures of the cost of operation.

It must be admitted that the individuals and their circumstances may determine which line to follow. Dr. Miller and Miss Wilson would not care to follow the wide-spread plan, nor would the beekeeping world want them to, for the restful peace and joy of their apiary and home shine forth over the whole beekeeping world. And when one looks upon the scenes of their labors, one can but ask if a lot of the hurly-burly and bustle of business life is not a great big mistake and that the rushing, wide-spread beekeepers would be better off if they should mix in a little more of the thoughtful life and ways of the sage of Marengo.

I have not answered the question which opened this article, and I did not intend to when I began. What is the answer? Providence R. I.

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Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Cooperation Among Beekeepers

Mr. L. L. Poplin, of Raleigh, N. C., writes to the American Bee Journal to suggest that State Beekeepers' Associations should be organized in every State. Where they do not exist, as in his own State, he proposes that the State Board of Agriculture be requested to help by employing the farm demonstrators to arrange county organizations. Further, he wants the farmer bee owners urged to change their old methods to movable-frame methods and cooperation to follow. All this is good. Those beekeepers who live in States where no State beekeepers' association exists should take the matter in hand and correspond with their State Board of Agriculture, urging such work in connection with farm demonstrations. The time has come for active work in this line, as well as in all agricultural colleges.

Inspector of Apiaries

We understand that a movement is on foot to create in Illinois a State Department of Agriculture, and put under its secretary the State Veterinarian, the Biological Laboratory, the Nursery inspectors and the Apiary inspectors. This is all right. But they further propose to have an inspector of apiaries and nurseries. We suggest that a man who is very good at examing trees for San Jose scale will probably be unable to properly examine a hive of bees. On the other hand an apiary inspector would probably be an inefficient nursery inspector. Are we going to make a shoemaker out of a tailor? If so we will have poor shoes or ill-fitting clothes.

Dr. Brunnich's Article

Dr. Brunnich, whose article appears further along in this number, is a splendid microscopist. Those photographs of magnified sections of combs give a clear conception of the comparative increase of thickness of the base of the cells and of the side walls. They show that the cast-off skins and dejections of the larvæ at the bottom of each cell increase its thickness much faster than the cocoons thicken the side walls.

But concerning the bees changing worker-comb into drone-comb, we are rather skeptical. Following every assertion of such a change, we have so far invariably found that the bees did not tear down to rebuild in another kind any of the comb given them, but that they only filled such spaces as were accidentally left open, or where combs had been broken down or removed. It was only in case of very imperfect cell base that even the foundation given them was ever changed. I will remind Dr. Brunnich, of his stating to me, among other interesting experiments, during our visit at his home in August, 1913, that he tried supplying a swarm with a hive full of drone-comb, and that the only thing they did was to narrow the mouth of those drone-cells to the proper opening for worker-cells, when the queen laid worker-eggs in them. This confirmed the similar experiments of Editor Cowan of England, of Drory of Bordeaux and myself. Now if bees do change worker-comb into drone-comb, why would they not do the reverse?

This question has some importance, for an excess of drones induces bees to swarm and drones cost a large amount of honey, without returns, unless wanted for breeding, from the best colonies.

Care of Honey

Although carbon disulphid is the easiest drug to use in destroying the moths, the old brimstone method is still good. To destroy the moths in a room where you keep your comb honey, burn enough of it to kill the flies. It will kill the worms and the millers also. By repeating the operation after a couple weeks you will destroy what there may be left of worms hatched from the eggs in the meantime. Of course, it is best to have the honey cases sufficiently open so the fumes may pervade them.

Extracted honey should be thoroughly ripe when put up in retailing packages. If not quite ripe it should be kept in a tank, in the hottest room of the bee-house or of the home. Every one of us has had unripe honey which might have been improved very much by proper management.

Quality is indispensable to secure customers and retain them.

Pennyroyal Honey

E. M. Rennolds has sent a sample of Florida honey that he says is as nearly pure pennyroyal as can be secured in a general way.

It is light amber in color, very clear, somewhat light in body, with a flavor of its own, very distinct, but not at all like the flavor of pennyroyal leaves. It would no doubt rate among the average amber honeys, and some might prefer it to any other honey, light or dark. C. C. M.

Practical Method of Rearing Queens in the Average Apiary

There has been much discussion as to whether it pays the ordinary beekeeper to rear his own queens. This is a question for every man to settle for himself. Some of our largest honey producers say that they cannot afford to rear their own queens. Others and very careful ones say that they would not accept any queens in their colonies except those of their own breeding. However, since many beekeepers think they cannot afford to buy queens in a wholesale manner, they should be familiar with the ordinary method of queen-rearing.

To the beginner there is usually much of mystery in this subject, which is one of the most interesting things in connection with the business of honey production. Most beginners start with scrub bees. Nine out of ten buy black or hybrid bees, which are undesirable from any standpoint. It is fortunate for the beekeeper that a change of stock from the poorest scrubs to the best of the pure races is such an easy matter. Simply by replacing the queen with one of the desired stock the colony is shortly made over. There are several thousand new readers of the American Bee Journal, many of whom beginners who are not familiar with the practices of the veteran, and it is for their benefit that this article is prepared.

The first essential, of course, is a pure queen to serve as a breeder. If one has none, a good one should be bought from a queen-breeder who has desirable stock. As a rule it is not indispensable to buy tested queens, since two or three untested queens can be bought for the price of a select tested one, and if one buys from a conscientious breeder the untested queens seldom prove disappointing. However, they must be tested before using them as breeders.

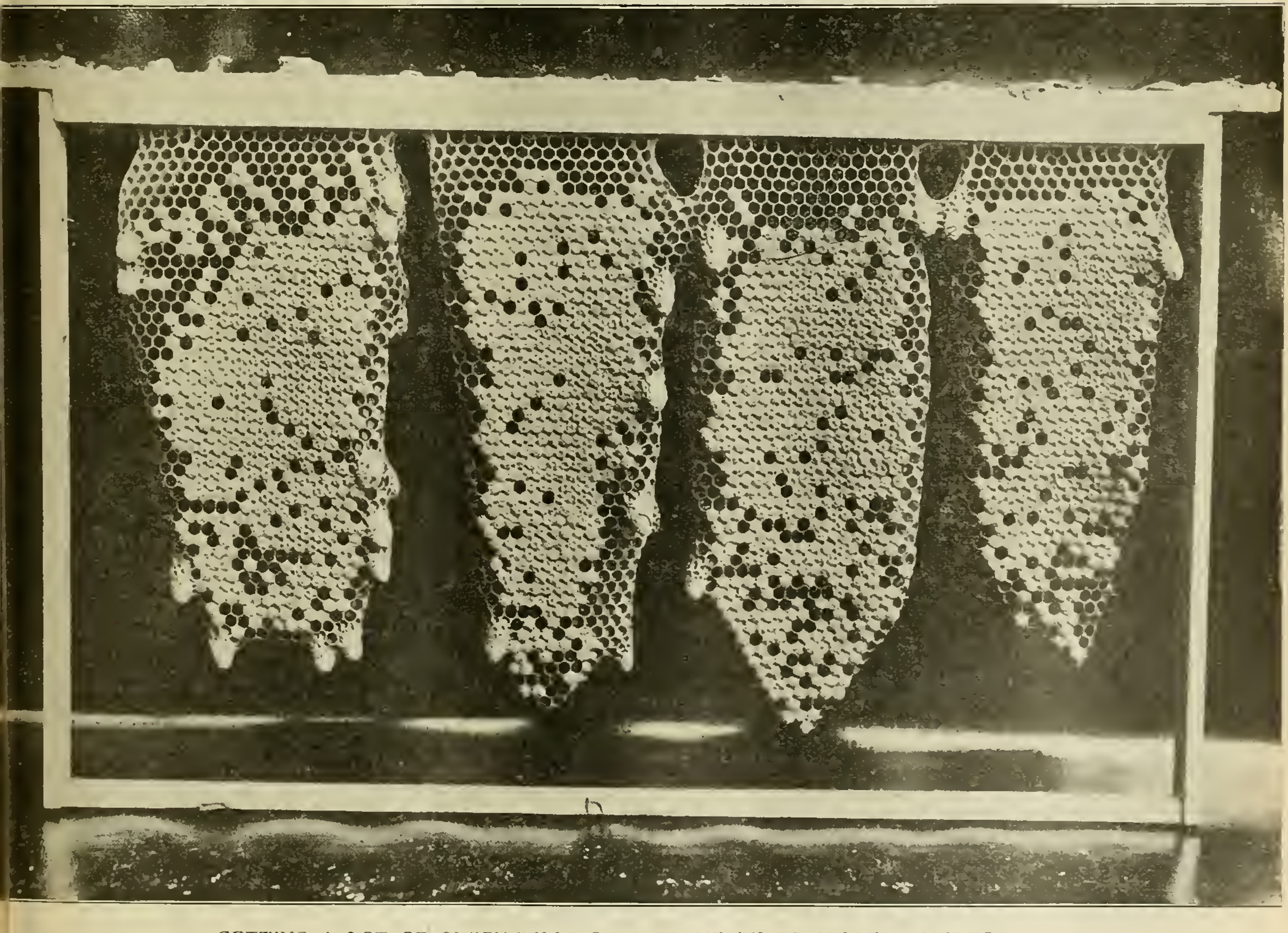
REQUEENING A WHOLE APIARY FROM ONE PURE QUEEN.

With one purely mated Italian queen it is quite possible to requeen a whole apiary of ordinary bees and have them all practically pure Italians at the end of two or three years. If the beekeeper has 100 colonies it will be necessary to rear as many queens and replace the hybrids already in the hives. The young queens will of course be pure stock, but since many will mate with the hybrid drones their workers will all be crosses also. However, we now know that the mating of a queen does not affect her male offspring, and if her mother was purely mated all her drones will be pure. Thus we will have thousands of pure Italian drones within a few months. If the first queens are reared early in the spring, a second lot can be reared from the purely mated mother in August or September and used to replace those of the first ones which are impurely mated. By this time most of the drones present will be pure Italians, so that the percentage of purely mated queens will be large. If the first lot are not reared in time to be replaced the same season it can be done the following spring. A little later on a third lot can be reared to replace such as are not purely mated and thus we have the whole apiary Italianized with little outlay except the time necessary.

If the beekeeper thinks he can afford it, he will buy several good queens to begin with and will rear as many drones as possible from those which he does not use for producing queencells. To rear plenty of drones in a good season is not difficult. It is only necessary to place drone-combs in the center of the brood-chamber. The greater difficulty is in preventing the rearing of drones in colonies that are undesirable as breeders. To do this in early spring, we remove the drone-comb from those colonies and replace it with worker-comb. In spite of all you can do, some drones will be reared in corners. But the processes indicated will greatly increase the possibility of pure matings.

REARING THE QUEENS.

The cell-cup or Doolittle method of rearing queens will not be touched in this article. He who wants to rear queens in large numbers had best secure the Doolittle book. We exhibit the cell-cups and the matured cells only to show the method as compared to the natural way.



GETTING A LOT OF QUEEN-CELLS ON A FRAME BY DR. MILLER'S METHOD

In the August number of our Journal for 1912, we gave a cut of Dr. Miller's method of securing a large number of queen-cells from one comb in a strong queenless colony. We reproduce it here, for the benefit of the novices. The colony containing the breeding queen is supplied with one or more frames of foundation or of new comb, cut into strips to secure plenty of edges, since the bees build queen-cells in preference on the edges of the combs. As soon as the queen has filled one of these combs with eggs, it is placed in the center of a strong colony after depriving it of its queen and of most of its young brood. It is well to trim the edges of this comb with a sharp knife, as during the repairing the bees are the more likely to build a great number of queencells. This is the best method of rearing queencells naturally in comparatively large numbers from your choice queens. The process may be repeated as often as necessary. Usually we repeat it in about five days in order to have fresh queencells to replace the ones which may have accidentally been destroyed in inserting them in colonies.

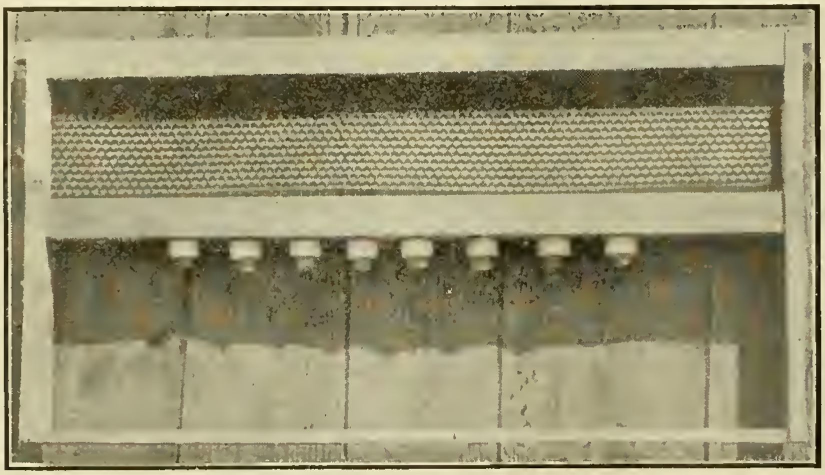


FIG. 1.—FRAME OF CELL-CUPS READY FOR THE LARVÆ

When the cells are nearly mature, usually nine days after the operation just mentioned, open the colony and count the queencells. One cell, of course, must be left in this colony. The others may all be used in requeening colonies of undesirable stock. Make as many colonies queenless as you have cells to spare, during the afternoon of that ninth day. The next morning, carefully cut out each of these cells with a sufficient amount of comb to make sure that the cell itself will not be injured and insert it carefully in the center of a brood-comb in each queenless colony. Within five days you may readily ascertain whether the operation was successful. If not, and the bees have reared queencells of their own brood, destroy these and give them a cell from the second batch.

September is a fine time to requeen an apiary. By this time the honey-flow is about over in most northern or central localities, and few colonies with a fall-hatched queen will swarm the following season if properly handled. In the way above described the queen is mated from the hive in which she is to remain, and the beekeeper is saved further trouble except to make sure that colonies where the queen fails to return from her mating trip are properly supplied with another queen. For this purpose it is well to have a few queens reared in nuclei. The nuclei made for queen-rearing are usually united together or to some neighboring colony just before winter.

Colonies which are rearing queen cells must be strong and well supplied with honey. Queen-cells must be handled carefully and placed as near the center of the brood-nest as possible so as not to be neglected. The colony from which a young queen is to mate must be closely watched to ascertain when the queen is laying.

Breed from the Best

If you can buy better stock than you now have, your first step toward improvement is to buy a tested queen of that stock—perhaps still better two or more untested queens. You may as well have all the advantages of the improvements that others have made. But you are not to stop at that. It is only a first step. With that as a start, you are to begin a ceaseless effort toward further improvement, which effort is only to end with the end of your life.

You must know your stock, must know each colony, and *the most important thing to know is the amount of honey each colony gives you as surplus.* No indefinite guessing about it, but you must put down in black and white each pound of honey you take from each colony throughout the season. You may be surprised to find how great the variation, and especially at the small amount you get from the poorest colonies. Like enough you will find that the best colony gives at least five times as much as the poorest.

Suppose you have five colonies, and from them you get in a given season 20, 40, 60, 80, and 100 pounds, an average of 60 pounds to the colony. Then in-

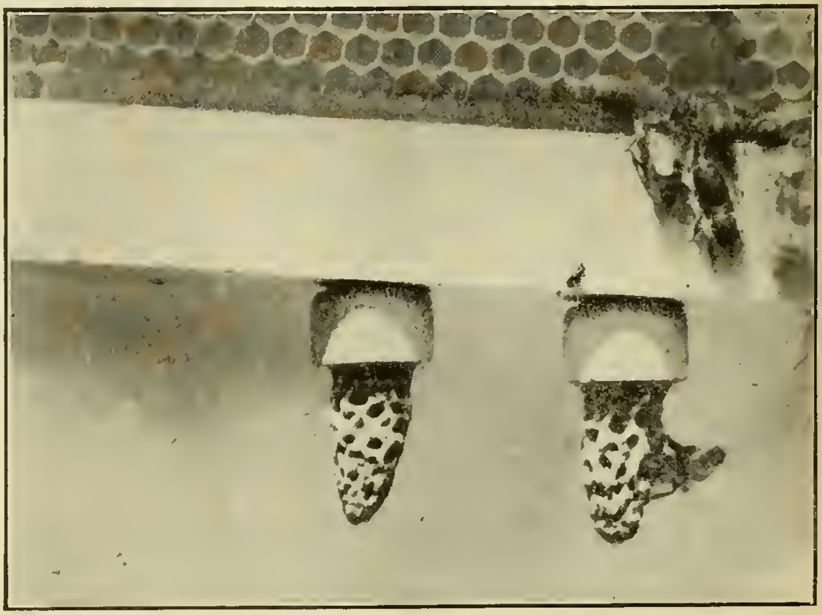


FIG. 2.—FINISHED CELLS BY THE DOOLITTLE METHOD

stead of allowing each colony to continue its own stock, suppose you requeen the two poorest from the better stock, and suppose that should only bring them up to the average, 60 pounds. The increase of surplus from the two colonies would be 60 pounds, or 30 pounds for each of the queens you have introduced. Right here it may be worth while to stop and inquire whether it might not pay well to buy two queens, say at a dollar each, for those two colonies. With a gain of 30 pounds each, you would need to sell it at only 3⅓ cents a pound to come out even, and all you would get more than that would be so much clear gain, with only the trouble of introducing two queens. Instead, however, of buying, it may be still better to requeen from your own stock.

But that 60 pounds is the smaller part of the gain. You have brought up the average from 60 to 72 pounds per colony, an increase of 12 pounds per colony, and the beauty of it is that, with any kind of proper management on your part, that increased average of 12 pounds is to continue year after year.

Having secured a definite record of the performance of each colony, you are now to choose the colony or colonies from which you will breed in the following season. Two ways are open. One will tell you "Breed from the colony that gives you the most honey." Another will tell you, "Don't do that. A colony that gives away above the average yield is a sport, a freak, and young queens reared from the queen of such a colony are inclined to sport in their turn. Having departed from the fixed type, some of their progeny may be good, and some may be very poor. Breed from those that are just a little above the average, and you will hold the gain you have made, and thus gradually and surely you will advance the character of your stock. Slow but sure is the better way." To this will be replied, "There is much truth in what you say, but I have tried the plan of breeding constantly from the best, freak or no freak, and I know that I have made great gain. Of course, I cannot say what might have been if I had followed the other plan, but I doubt if I would have gained as rapidly."

So there you are, and you can take your choice of the two plans, or, indeed, use both. In either case, your record is important. Not only is it important to know which queens are best, or a little above the average, but perhaps it is still more important to know which colonies are below the average, most important work is to weed out the poor stock, replacing with something as good as the average, or better. The great thing is that this weeding out shall be persistent and constant. For after the poorest have been weeded out one year, although there shall be none so low the next year, yet the standard has been raised, and any below that raised standard must in their turn be weeded out, and so on year after year.

But while the number of pounds surplus is a matter of exceeding importance in selecting a queen from which to breed, it is not the only thing. If you should decide that you will follow the plan of breeding each year from the very best, freak or no freak, and should find a colony giving a yield decidedly beyond that of any other colony in the apiary, and yet it should happen that this colony should be exceedingly vicious in temper such colony for it is possibly true that your should at once be ruled out as a proper one from which to breed. If section honey is the aim, then a colony would be ruled out eligible for a breeder if it should show sections so filled as to have a watery look. After throwing out any colony with an objectionable trait of any kind, there will still no doubt be plenty to choose from. So keep right at it, year after year, until you reach that point where every colony in the apiary is just as every other colony, and then—but just wait unti you reach that point. C. C. M.

Southeastern Iowa Field Meet.—A field meet for the beekeepers of southeastern Iowa is to be held at the J. I. Danielson queen-rearing yard, Fairfield on July 27. All are urged to come. An interesting time is in store.

DR. MILLER AT HOME—Photograph by E. F. Phillips

No. 2.—A Trip Through Texas

BY THE EDITOR.

MARCH 10 was the day set for the first local beekeepers' meeting at Pearsall, county seat of Frio county, 60 miles south of San Antonio. The State Entomologist, Mr. F. B. Paddock, who had promised to accompany us, was unable to leave the college before the following Monday, so we went with friend LeStourgeon and his wife only. At our arrival, the first man I met, when stepping off the train, was the president of the local association, Frank Talbot, who turned out to be from our county in Illinois. Both he and his wife were as delighted as we were. They invited us for lunch before the meeting and we had a feast.

At the meeting, which followed and took place in the Court House, we met 15 or 20 beekeepers. The Texas sources of honey were discussed. Besides the mesquite, some of the leading honey producers are the guajilla (huajilla, pronounce waheeya), or zygia brevifolia, like the mesquite a mimosaceæ, producing fine white honey; the catclaw (*Acacia gregii*), another shrub yielding plentifully; the horsemint furnishing honey which is called "a little strong," indeed, and numerous others. Of course, in the cultivated spots, the cotton plant yields honey also. The hackberry was in full bloom and bees working upon it. I am told they get honey as well as pollen from this source.

I asked a question which brought a short discussion. What is the color of beeswax when first produced by the bees? Most authors call it "pearly white," but is it always so, even when the bees are gathering yellow honey? The beekeepers of the sainfoin districts of France state that while gathering that exceedingly white honey their bees produce dark wax. The pollen of sainfoin is brownish. Along the lowlands of the Mississippi river, during a flow of Spanish-needle honey, the combs assume a yellow color. What is, after all, the original color of beeswax?

Opinions were divided. It ought not to be difficult, if the wax is colored only after production, by the action of pollen of deep shade, to make sure of the color of the newly made scales. Yet no one could speak positively. Some held that, since wax is a product of digestion, its color must be the same regardless of the color of the pollen or the honey. To this Mr. Talbot replied that cows produce butter of different shades according to the food they get. He also said that steers fattened upon corn yield white tallow while in the steers fed upon cotton-seed meal the tallow is yellow. Why should not the bees produce wax of deeper shades when they feed upon dark yellow honeys? This reasoning seems plausible, and the beekeepers agreed to watch more closely the newly formed wax-scales and report in the Bee Journal. It is quite probable that we will have to change slightly the description of wax-scales as "pearly white," in our text books.

The foulbrood situation is well in hand in Frio county. Mr. R. A. Little, the inspector for that county, reported finding only two cases in 1915. But sacbrood is plentiful at times. It always disappears in summer. There is no European foulbrood in Texas.

The readers will perhaps remember that in our February number the distance bees fly for honey was discussed, and that Texas, with its extensive plains, was suggested as perhaps the most favorable to long flights. This was a good opportunity for investigating the matter. But practically every beekeeper declared that in his experience bees rarely went beyond a mile or two though they can fly much farther. Mr. Talbot mentioned having had seven colonies at one spot which harvested honey from the bitterweed, so as to produce a surplus of that bitter honey of 60 pounds per colony, while 75 colonies, 1¼ miles away, secured no bitterweed honey at all, even although the crop of mesquite honey was about over when the bitterweed came into bloom. The statement quoted on page 49 of February, that Mr. L. B. Smith reported his bees as working, by preference, at the distance of 4 miles rather than within one mile of their home, was not confirmed by any one.

The consensus of opinion is that bees smell the honey odor brought by the wind. As the wind helps them in their return trip, it was said that they were most successful when working in the direction of the prevailing breeze.

"This," said friend LeStourgeon, "is another evidence of the mosaics of Nature fitting together so well. If they went by sight the bees might fly with the wind. When they had to return against it, in a heavy honey flow, countless numbers of them would never regain the hive. To my mind this is one of the strongest arguments in support of the smell theory as against the sight."

The next day was spent in a trip to Pleasanton, Atascosa county. As the distance was but about 35 miles from San Antonio, we made the trip with Mr. LeStourgeon and his wife, in their automobile. The day was fine, and we stopped here and there to examine the vegetation. It is astonishing to see so many blooming plants in such a drouth. In some spots the ground was covered with a carpet of purple verbenas. As they had not had any showers for about two months and no real rain since August (we were then in the middle of March), it is evident that all those plants and trees can get along with very little moisture.

Most of the cabins found along the way are inhabited by dark-skinned people. No rain seems to be needed for the crop of little darkies or Mexicans that swarm about those homes in the brush. As my wife put it, there were "more children than chickens." Why do they not keep chickens and pigs? Because they leave home for two or three weeks at a time and "go fishing" and camp out, and they cannot leave anything at home that requires attention and care. There are many lakes in the country and plenty of fish in the lakes.

We saw some daisies and phlox and a number of other flowers. However, we were told that the soil is comparatively bare, on account of the drouth, as the land is carpeted with bloom in ordinary years, at this date. We saw bull-nettles with fine blooms. These plants are armed with spurs about one-half inch long and a little bag of poison at each spur, which causes more pain than a beesting. The seed is large, shaped like a castor bean and edible, with rich nutty flavor. They are very plentiful, but the barefoot urchins apparently fear neither these nor the rattlesnake dangers. Yet there are rattlesnakes, and large ones, too.

A very interesting little animal, which feeds on insects and roots and gives testimony to the "survival of the fittest" is the armadillo, a four-footed mammal, with a carapace or shell which enables it to get around safely among the numerous thorns. It looks as if a mongrel of the opossum, the turtle and the hedge-hog or porcupine. It is absolutely harmless, and its shell is made into baskets by fastening the end of the scaly tail to the tip of the slender snout or nose. It lives in the ground, and when caught after it reaches its hole, it braces itself with claws and shell, so that a strong man, pulling at its tail can rarely succeed in drawing it out.

But why are plants and shrubs so exceedingly thorny in southern Texas? The catclaw, for instance, is named on account of its thorns having a return curve similar to the claws of the cats, an ugly tree to handle, but a splendid honey yielder. LeStourgeon says that these thorns are another evidence of the survival of the fittest; that in such a climate their thorns are the only thing that protect them against extermination by the grazing animals, in seasons of drouth.

At the meeting, in the Pleasanton Court House, we met the inspectors of Atascosa and Wilson counties, and the State Representative, F. H. Burmeister, who secured the State inspection law, in concert with our old friend and contributor, Louis Scholl, who is also a State Representative.

Here we heard for the first time of the dwindling of colonies, in spite of the mild climate. From the consensus of the reports, I am inclined to think that it is due to lack of pollen for breeding, during a succession of months. Several apiarists practice feeding cotton-seed meal, as we feed flour in the North, for a pollen substitute. I believe this will become popular in Texas, if it is not already so in a number of locations.

There was also reported another kind of dwindling which could not be caused by this pollen shortage. Some apiarists ascribed it to unhealthy honey harvested late in the fall. Mr. J. D. Bell, of Jourdanton, accused soured horsemint honey of the mischief. In different countries different sources of honey are claimed to be the guilty agents. It is probably more the condition of the honey, its unripeness, which causes the trouble, rather than the kind of honey. There is ample field for study in these incidents.

Corn is grown and yields good crops, when there is enough moisture. In some comparatively moist spots we saw fields of it. It was about 4 inches high, but suffering. However, they have had a good rain since and the prospect is improved.

Mr. V. Booer, the inspector for Wilson county, made a suggestion worth recording. When colonies are treated for American foulbrood by the starvation plan and transferred twice, there is a tendency for some swarms to desert the hive, at the second transfer. In prevention of this desertion, Mr. Booer clips the queen's wings just before treating the colony, and insures the withholding of the swarm. A comb of brood, given after treatment, helps satisfy the swarm.

Mr. Davidson, the Atascosa County Inspector, a man of great experience, mentioned paralysis as a disease quite common after long spells of confinement. He calls it "constipation," which changes to an epidemic, under certain conditions. We believe "constipation" is the better name.

Our next trip was to Hondo, on the Monday following.

[To be continued]

About the Combs

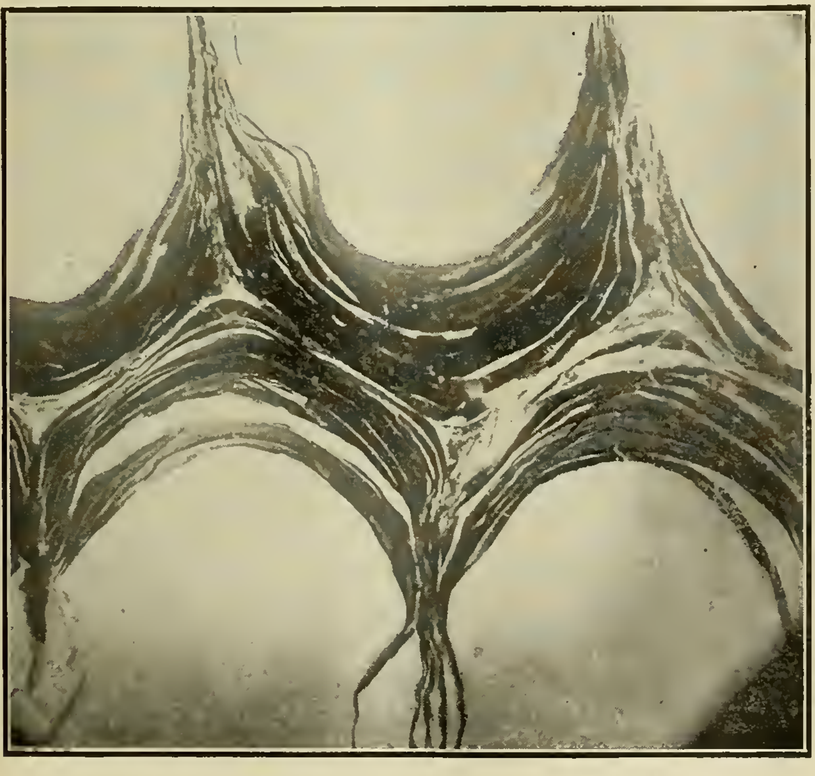
BY DR. BRUNNICH.

WHEN I hive the beautiful cluster of an artificial swarm, I often find in the swarm-box a new white comb; then I cannot but admire the charming little work of the beautiful hexagons of wax, which no human master with all the craft of his race and with all the perfect instruments at his disposition can copy. Considering that this little masterwork is not only a wonder of exactest and minutest architecture, but that it represents the simplest, the most suitable and the most parsimonious cradle, the enjoyment in beholding it is the greater, and one is touched for an instant by a solemn feeling before the wonderful works of the Almighty. These little cells, formed of the very blood of the bees, represent the *cradles* of the coming generation, they serve as *storerooms* for the noblest product of the plants, the *pollen*, and for the divine nectar, the *honey*.

But like all things of the world, the golden combs *grow old*, the more generations of bee-children are reared in them from the egg to the full-grown insect, the darker becomes the waxen palace. The fresh new comb is white; it colors in the course of time in the hive to yellow, without brood being reared therein. Already the great Huber endeavored to find the reason of this coloration, without giving a satisfying explanation. Huber found that the bees fasten a thread of propolis on the horizontal edges of the hexagons, partly perhaps to bring the hexagon to the circle, partly for solidity.

Only *breeding* in the new combs changes them in color and solidity essentially. It is well known that the bee-egg evolves in the open cell to the grown-up worm (larva) in 8½ days. The cast off skins, as well as the excrements, are left in the bottom of the cell. Now the larva is enclosed under a porous cover and it spins its cocoon, an extremely fine weft, by drawing a thin thread in all directions.

After being spun in, which takes about a day, the larva remains motionless, but in the body of the worm an exceedingly active work begins, the *transformation;* under the subtile skin there are growing feelers, eyes, tongue, legs, sting, etc, there are forming trachea with their delicate clasps or spirals of chitin and the glands. All these are built of a fatty and albuminous substance, which fills the greatest part of the interior of the larva; 21 days after the queen has laid the egg into the cell the young bee is ready to emerge. As soon as it has left its narrow room other young bees come to prepare the cell for a new egg. They varnish the inner wall of the cell, especially the bottom containing the skins and excrements of the larva, with an extremely thin layer of wax. Before the queen lays an egg, she "looks" with her antennæ into the cell to satisfy herself that it is well prepared.


SECTION ACROSS A VERY OLD WORKER-COMB

Every beekeeper knows the brilliancy of the cell-bottoms, when the bees have prepared the brood-nest for the queen. So the young "house bees" have not only to clean their hive, take care of the brood, look after the honey, etc.; every day in the busy season they have to wax and dry—rub over—3000 cells. The accompanying cut shows the schematic section of an old comb. The bottom of the cells has become thick on account of the skins and excrements, the thickening of the walls is insignificant, because the cocoons are extremely slight. If one puts a piece of old comb for some hours into benzine, which dissolves the wax, it is not difficult to draw out one cocoon after the other, like little bags, and by counting all the bags it is possible to establish how often bees have been bred in the comb. If a comb is used for brood only once, its solidity is remarkably augmented, and every one knows the extreme toughness of old black combs.

As a rule, I discard all brood-combs, which are so thickened, that by looking through against the light, they are not transparent at all. These combs are unfit for breeding, and it is chiefly the last years that the bee-men have learned that the bees do not like to breed in those old black combs. My explanation for the antipathy of the bees against old combs is the following: If we examine early in spring a colony with rather new combs, we can observe that the brood-circles on both sides of a comb are very exactly corresponding to each other. It is as if the queen or the bees could recognize across the middle rib of the comb the eggs of the other side. It is clear that this corresponding of the two brood-circles is useful; the larvæ on both sides of the bottom of the cells are warming each other. If the cell-bottoms are very thick, it is difficult, if not impossible, to match the brood-circles on both sides of the comb; besides the thick wall between the two larvæ is a considerable hinderance for mutual warming. In summer this circumstance is no longer important, but in spring the effect is indeed this, that colonies with old combs cannot develop themselves to the desirable strength.

It is possible that in the United States (where the honey crop is not only five to ten times as large as with us, but also much later and longer), this fact is of little significance, but in most parts of Switzerland and middle Germany it is of the highest importance. Here the bees begin to breed, as a rule, in March, and it requires a good queen and resistant bees for bringing the colony to its full development in the middle of May. Very often the weather in April, and even in May, is wet and cold and frosts are frequent, but as the honey yielding lasts only from the middle of May (sometimes earlier) until the hay harvest, which begins sometimes as early as the last days of May, it is absolutely necessary that we have an exceedingly rapid and strong development of the colonies from the beginning of April until the middle of May, or our bees come too late, when the table is already cleared.

It is a strange fact, which I often have observed, that some one begins beekeeping with zeal and love, augments his colonies until his bee-house is full. (You know our hives are, as a rule, close together in a little cottage.) For 6, 8 to 10 years he gets nice honey crops, and then his yard begins to fail. He gets no swarms and has difficulties; the crops become more and more meager. The bee-man loses his interest in bees and his colonies languish, or a bee-disease makes short work with them. This phenomenon finds its simple explanation in the growing old of the brood-combs. In the beginning the hives had beautiful new combs, thrived, and even gave swarms. Later on, when the house was full, the beekeeper did not think it necessary to give foundation to his colonies, and the poor bees were obliged to spend their lives on the old, thick, black combs. It is no wonder that they no longer swarm, owing to the bad development in spring.

With our poor seasons we are obliged to do in every line our best, and therefore a regular renewal of our brood-combs is a *conditio sine qua non?* I for my part give every year to each colony two sheets of foundation; in winter my bees occupy 10 combs, 10½x14 inches; in summer 11 to 13 combs. In spring or summer I hang the old or bad combs behind, for removal in the fall. Thus I remove a number of old or damaged combs, or combs with drone-cells in places where we do not like them. These combs are very useful, if one is running for extracted honey. The drone-cells are cut out and a corresponding piece of good comb is set in. For extracted honey, old brown combs are very good, because those combs do not break in the extractor as new ones do. However, the bees deposit the honey always at first in the brown combs and not in those quite black.

Now a word about *drone-comb.* The experienced beekeeper knows that each colony ought to breed a certain number of drones. A colony without any or with only a little drone comb does not work with the same zeal and delight as another, which is allowed to breed drones enough. We must not forget that the worker-bees are female, and that in their little heart there must be some sentiment of love towards the other sex. If they have on account of entire foundation no possibility to construct drone-cells, they will satisfy their desire by transferring worker-comb into drone-comb in places where we may not like to have the latter. I let them build drone-comb on the bottom of a center frame, a piece about 4x5 inches, or in 4 or 5 frames I give them triangular spaces in the lower corners of the frame. I avoid having drone-combs in adjoining frames, because the space of 1⅜ inches is too little for drone-cells. The drone-combs grow old very rapidly and contrarily to worker-comb, the diameter of the cell is considerably diminished in old drone-comb, producing remarkably small drones. Therefore, I cut away every year in spring the old drone corners or drone rectangles. In April and May it is a pleasure for the bees to fill those empty spaces with drone-comb, and I get stately and vigorous bee-lads. Of course, I avoid giving drone-comb to bad colonies, while colonies with remarkable qualities will be given a great many drone-cells, especially colonies selected for a mating station.

Zug, Switzerland.

◆

The Senses of the Honeybee

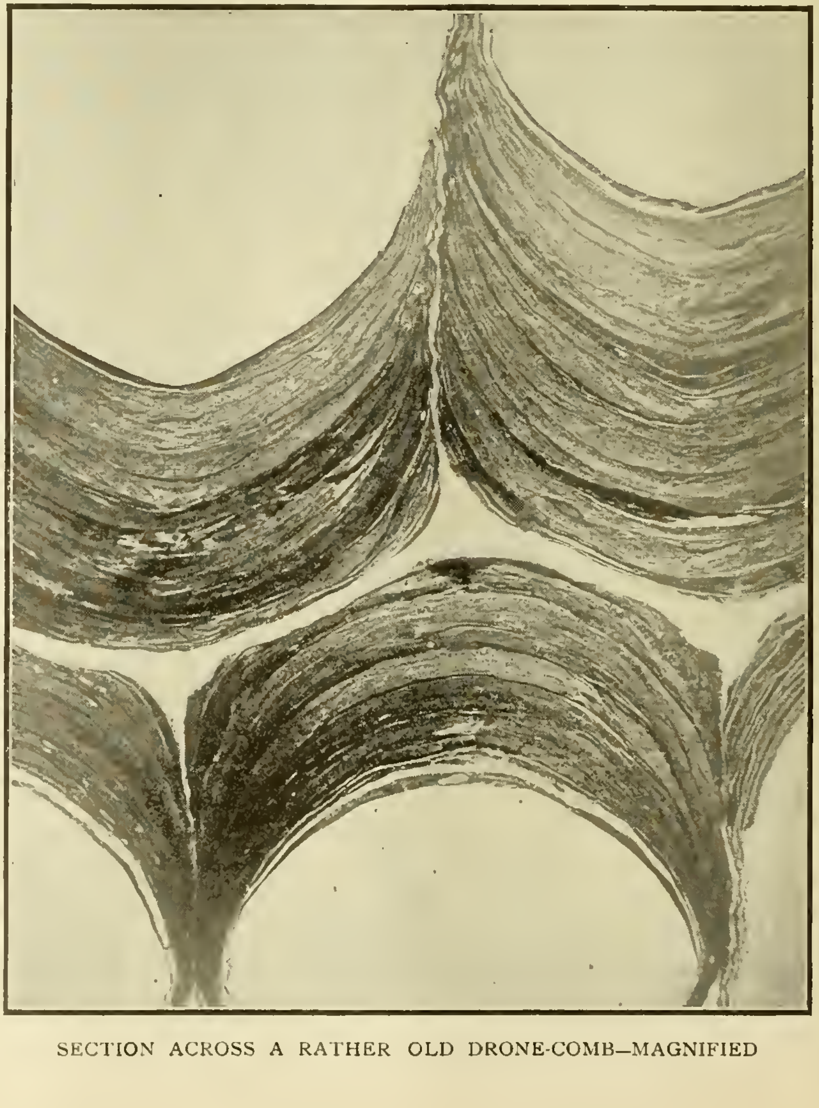
BY N. E. MC INDOO PH D.,

[Continued from June.]

VON BUTTEL-REEPEN thinks that bees have a queen odor, a family odor, a drone odor, an individual odor for each worker, a particular odor for the bees carrying wax scales, a hive odor, etc. He produces almost no experimental evidence in support of his views. The writer is a firm believer in his views, but has not been able to devise experiments to prove most of them.

It is certain that a queen gives off an odor, and it seems reasonable that the odors from any two queens would be slightly different. It is also quite probable that all the offspring of the same queen inherits a particular odor from her. This odor, called the family odor, perhaps plays little or no use in the lives of bees, for it is certainly masked by the other odors. Drones seem to emit an odor peculiar to their sex, but little can be said about it. It seems certain that each worker emits an individual odor which is different from that of any other worker. It is also probable that the comb builders, nurse bees, and those secreting wax emit odors slightly different from those of the field bees. Such a statement is easily made, but perhaps beyond our means of proving it.

Of all odors produced by bees, the hive odor is probably the most important. It seems to be the fundamental factor or principle upon which the social life of a colony of bees depends, and perhaps upon which the social habit was acquired. It is the same as the nest odor among ants. Without it a colony of bees could not exist, since it is composed chiefly of the individual odors from all the workers in that hive, and is supplemented by the odors from the queen, drones, combs, frames and walls of the hive, etc. In brief, the odors emitted from all the objects within a hive make up the hive odor.



SECTION ACROSS A RATHER OLD DRONE-COMB—MAGNIFIED

From this definition it is easily understood why no two colonies have the same hive odor. The hive odor of a queenless colony is perhaps considerably different from that of a queenright colony. The absence of a queen odor in the hive odor probably explains why the workers in a queenless colony are irritable and never work normally. All the bees—workers, queens and drones—in a colony carry the hive odor of that colony on their bodies among the hairs. This odor serves as a sign or mark by which all the occupants of a hive know one another.

Since the queen and drones are aristocrats, they seem to disregard the sign that has been forced upon them, but whenever a queen enters the wrong hive, she soon realizes that she wears the wrong badge. Bees carry the hive odor wherever they go. Bees returning to the hives from the fields pass the guards unmolested, because they carry the proper sign, although the hive odor that they carry is fainter than when they left the hive, and it is also partially masked by the odors from the nectar and pollen carried by these bees. A nectar carrier from a strange hive is often admitted because the bees are willing to tolerate a worker carrying a foreign hive odor for the sake of getting its load of nectar.

Bees kept in the open air for three days lose all the hive odor carried on their bodies, but each bee still emits its individual odor. When a colony is divided, the hive odor in each half soon changes so that after the third day one-half possesses a hive odor so different from that of the other half, that the workers from the two halves, when put together in observation cases, fight one another as though they had been separated all their lives.

When bees are united we are dealing altogether with the hive odor. The mixture of two or more hive odors and more or less smoke so confuses the workers that they do not offer to attack one another.

While a foreign hive odor calls forth the fighting spirit in workers, the queen odor always seems pleasant to workers regardless of whether the queen belongs to their hive or to another hive. This is shown in introducing queens by the cage method. By the time the introduced queen has emerged from the cage she has taken on the hive odor of the workers around her, and for this reason she is perhaps accepted chiefly on account of her peculiar odor not being partially masked by a foreign hive odor. Even if the queen odor forms a part of the hive odor, it is probable that this odor to the workers stands out quite prominently from the hive odor. That workers do not miss their queen for some time after she has left the hive, indicates that her odor thoroughly permeates the hive odor, and that whenever this odor grows faint the workers know that she is not among them.

When a queen is introduced by the smoke method, the hive odor is changed by the smoke, the workers are confused and excited, and by the time they have become reconciled, the introduced queen has taken on enough of their odor to allow her to remain in their hive without being attacked.

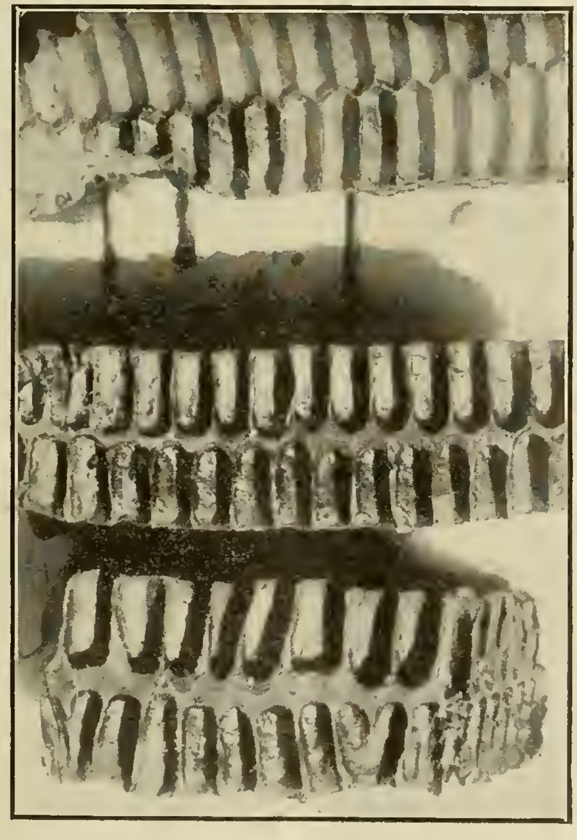
Perhaps every beekeeper has witnessed what happens to queens when they are held too long between the fingers. Odors from the fingers change the hive odor on the queen, and as a result the workers ball the queen. In such a case only a little foreign odor is needed to overbalance the pleasant queen odor. This is further shown when a finger is rubbed over the back of a worker. In observation cases the worker thus treated is immediately attacked by its hive mates.

There has been much speculation concerning the ruling spirit or power in a colony of bees. In the writer's opinion a normal hive odor serves such a purpose. The hive odor is a means of preserving the social life of the bees from without, and the queen odor perpetuates it within. As already stated, the workers know their hive mates by the odor they carry. This odor insures harmony and a united defense when an enemy attacks the colony. The queen odor constantly informs the workers that their queen is present. Even if she does not rule, her presence means everything to the bees in perpetuating the colony. Thus, by adopting the stimuli of these two odors and being guided by instinct, a colony of bees perhaps could not want a better ruler.

The sense of smell of the honeybee is much keener than that of man, and perhaps no other animal, except ants, can compare with it in this respect. The ability of the bloodhound to follow scented trails is only one of the many uses of the sense of smell in the bee. Bees do not follow scented tracks as much as ants, but it is quite probable that queens in flying leave scented trails behind them, and these trails may aid the drones in overtaking the queens.

The sense of smell of the honeybee is poorly developed compared with that of smell. It is still a disputed question as to whether bees can distinguish colors, but from the many experiments performed it seems that they can, although perhaps not as we do. It is also doubtful whether they can tell whether objects are round, square, flat, rough or smooth, by sight, although this is easily done by touch when the objects are small. It is certain that bees see long distances, but how distinctly, we do not know. The only use of sight inside the hives is perhaps to tell light from darkness; outside the hives it is perhaps the most important sense used in mating, in finding flowers and in returning to the hives. The writer believes that bees find flowers by seeing them from considerable distances, but when within a few feet of them, they are able to select the ones they want primarily by the odors from these flowers.

We still know practically nothing about the sense of hearing in the bee. Perhaps every beekeeper has heard queens pipe and workers squeal. A worker is almost sure to squeal every time it is pinched or caught in a tight place and cannot escape. When the wings are pulled off the workers continue to squeal, showing that they have special organs for producing these sounds. No such organs have ever been described, but three special organs for receiving sounds have been found. The pore plates in the antennæ have been called organs of hearing, besides special devices to prevent the insect from flying against objects that it can-



SECTION THROUGH A NEW WORKER-COMB, THROUGH AN OLD WORKER COMB, AND THROUGH AN OLD DRONE-COMB not see. A second so-called organ of hearing is found in the head at the base of each antenna, and a third one in the tibia (fourth segment) of each leg.

Bees can usually tell when a thunder shower is coming up, and they seem to have a sense of humidity. Unless humidity is sufficiently connected with temperature, bees need a special sense organ to tell dry air because they cannot feel moisture through the hard outside covering, judging from the fact that water does not pass through this covering.

Bees seem to have a sense of temperature, but since heat readily passes through the outside covering they do not need special organs for this sense.

Bees, like people, need a sense of direction, but they probably do not have such a sense. Instead of this sense, the landmarks that they know seem to answer this purpose.

The honeybee has been called a reflex machine. By reflexes we mean those actions which are involuntarily performed, or those actions which are performed without thinking. Most of our daily actions in dressing, eating and working are reflexes, but whenever we care to we can think of doing all of these actions before performing them. The bee, according to psychologists, cannot think, and therefore all its actions are reflexes. But when we consider all the strange things that bees do in emergencies we must admit that bees are more than reflex machines; how much more we do not know, but in this respect there is probably a difference between the various races, and even between individuals of the same race.

If bees cannot think, they do not have a memory, and consequently have no conscience. If this statement is true, how do they find their hives, know their queen and hive-mates, etc.? All this is accomplished by what psychologists call association of ideas. Two examples will be used to explain what is meant by association of ideas. A field bee, ready to return to its hive, flies high into the air, and after seeing a landmark travels in a bee-line. The sight of the landmark called forth an idea concerning this object which had previously been fixed in the nervous system of the bee. This idea was then associated with another idea concerning its hive. After having had several ideas concerning various landmarks called forth, and after having associated these ideas with other ideas, the bee returns to its hive perhaps without making a single mistake. The same method may be used to explain how a worker knows its queen and hive mates, but in this case the queen odor and hive odor are the chief stimuli used in calling forth the ideas concerning these two odors. In turn these ideas are associated with other ideas. Psychologists tell us that the ideas in the nervous system of a bee do not associate with one another until some of them are called forth by a stimulus, and even then these associations are not sufficiently organized to recall past experiences. This is why bees do not have a memory, while with us a stimulus is not always needed in order to cause our ideas to associate with one another, and further more the associations in our minds are so highly organized that they are able to recall past experiences.

According to the above way of reasoning, bees do not experience pain, but when we carefully consider the behavior of injured bees we are almost convinced that bees do feel pain. Bees with antennæ either cut off or pulled off live only a short time. They seem to die from a shock to the nervous system. Another form of shock may even be cited. Bees confined in observation cases without food or water begin to die within an hour after being put in the cases, and all of them are dead within four hours. Bees confined in the same cases with water live the same length of time. Bees confined in the same cases with honey covered with cheesecloth so that they can smell it, although they cannot touch it, live from 43 to 67 hours with 50 hours as an average. There seems to be only one way of explaining such behavior, because the question of starving to death can have no weight. The first two sets of bees soon died because their case was hopeless from the beginning. The third set lived 50 hours on "hopes" only. During all this time they smelled the honey and tried to get it, but their efforts were in vain. Other cases might be cited to show that the "mind" of a bee is more highly developed than psychologists would have us believe.

In conclusion it may be said that if we understood the senses of the bee better we would know how to handle bees better; we could unite them and introduce queens more successfully; we would better understand the conditions governing successful wintering; in short, if we thoroughly understood the senses of the bee, we would thoroughly understand the bee itself and all its activities.

Washington, D. C.

* * *

Home Queen-Rearing

BY D. E. LHOMMEDIEU.

IT is now 40 years since I commenced working with bees. I have tried rearing queens for my own use, the various ways advocated from time to time, more or less successfully. Last summer I succeeded in rearing larger and better queens outside of natural swarming than by any other plan, as it comes nearest to the natural cell. The bees that start the cells are not excited more than with natural swarming.

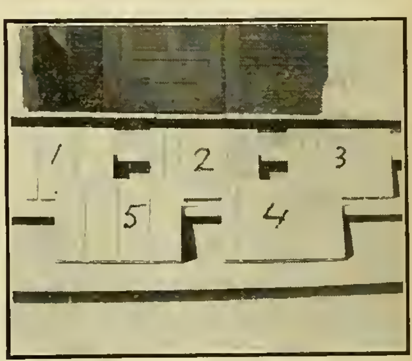
The plan is not new, but ought to be brought forward oftener in the bee journals, as some who keep bees depend mostly upon them for their information.

Just a little ahead of natural swarming, when the weather and flow of honey is right, take a full set of brood from a good colony with no hatched bees, place them in an extracting super, set the brood over a strong colony just above its brood-nest, with queen-excluder between, and if all goes well at the end of nine days look up your crop of big queen-cells. If any should not suit you, destroy them. There should be two or three to eight, large and fine, and I cannot discover that they are inferior to the natural cells, the bees having not been excited or lost any time. Give the good colony from which the brood was taken either combs, brood, starters, foundation or what you think best at the time their brood is taken away. About one colony in ten fails to start cells.

To finish up your large fine cells, there needs to be plenty of bees and heat to carry the cells until the queen is laying, and then she will look almost as large as a bumblebee. Take two combs, bees and all with one cell, place them in an empty hive on a new stand, not closing the hive until evening of the second day; making five or more such nuclei.

The accompanying cut shows how the rear and front boards of bodies may be grooved to supply from 3 to 7 nuclei in one body, by using a rabbet plane 5-16-inch wide, cutting perpendicularly, so that when you slip in the division-boards, it cuts the bees off from passage. These must be full length and depth of hive.

No. 1 will make three small 3-frame hives out of one 10-frame body, to be left on the parent colony, if wire screens are used. This should be set above a second story with an excluder above the main body so the queen may not get to the new queens.



LHOMMEDIEU METHOD OF GROOVING BACK AND FRONT BOARDS OF HIVE SO AS TO MAKE SEVERAL NUCLEI

No. 2 can be used for one to five queens, or let the bees fill the center apartment and rear two queens at each side.

No. 3 is designed for seven queens to be reared simultaneously if desired.

No. 4 will do for a honey-storing space in the center and one queen apartment on each side.

No. 5 will supply four queens with two combs each.

Each nucleus should have a separate entrance, and a part of them may be placed at opposite ends or at the sides.

Colo, Iowa.

* * *

Breeding Queens

BY ADRIAN GETAZ.

CHOOSE for breeding queens the very best you have, that is the rule. But which are the best? Evidently those whose colonies have given the best returns. We rear queens, not for their "personal" qualities, if I I may use the expression, but for the qualities of the workers they produce.

That is not all yet. We want bees

still better than those we have if such can be obtained at all.

How shall we proceed in selecting our queens in view of improving our stock? Two ways or two systems present themselves. One is to cross bees of different races in the hope that among the crosses something far better than either parent stock may eventually be obtained. That is what Burbank has done with plants. After a superior plant has been obtained it may be propagated indefinitely by cuttings and grafting. But that cannot be done when crossing animals.

We may gather a few lessons from stock-breeding. The greater the difference between the parent stocks the greater will be the variations between the crosses and their descendants. Hence, to obtain something new and superior, stocks as different as possible should be secured. Generally the first cross combines the qualities that are the strongest and best established in the parent stock. For instance, if we cross a Jersey bull with a cow of common, hardy stock, we may have crosses that are good milkers and at the same time possess the hardiness and strength of the common stock. Occasionally some are even more profitable than the pure Jersey stock, as they can be fed successfully on much cheaper food. But we cannot perpetuate these qualities. If we use these first crosses for breeders, the next generations will show all sorts of variations and combinations, some of the individuals exhibiting only the defects of the parent stocks instead of their qualities. And the same thing would occur with bees. Yet by preserving and breeding all the time from the best, good results can be obtained.

The second method would be to start with the best stock obtainable and breed exclusively from it, selecting always the best queens; that is my preference. An objection to it is that when in-breeding or breeding from the same stock indefinitely, there is a risk of the stock deteriorating; the faculty of reproduction being the one most likely to suffer. In support of that opinion, Darwin's theory has been quoted that in the natural state in-breeding is rather the exception, that animals cross between far-related parents, and that in the majority of cases plants are fecundated by pollen brought from other plants by insects or by the wind. I don't think this argument has any value. In-breeding in some classes of plants or animals is the rule instead of the exception. But suppose the theory always correct. It is easy to conceive that a defect might be perpetuated by in-breeding and eventually bring the extinction of the race. But such need not be the case when man is in control, because the defectious individuals can be eliminated.

There are some cases in which close in-breeding has brought in a weakness of reproduction. But such cases exist only in cattle and swine raised exclusively for fattening purposes. Nothing of the sort has ever occurred in cattle bred for milk or in horses. The weakness must be due to the excessive disposition to storing fat. This could be expected if we consider that such a disposition is in some respects a kind of diseased condition.

Another thing must be mentioned, the influence of the sexes. In the higher animals the concourse of both sexes is needed to insure reproduction. The offspring partakes of the characters of both. Many farmers dispute that statement and insist that the male has more influence than the female. But the authorities say that if the male of a pure race has more influence it is due, not to his sex, but to the fact that his characteristics are stronger, or to use the proper word, better "fixed." What does the word fixed mean? Let us take the Jersey cattle. From away back, only calves showing the regular standard color have been used for reproduction. So that color has become fixed and now is invariably reproduced. But if calves of any and all colors had been used, the color would not have become fixed, and we would have Jersey cattle of all colors.

When we come to bees we are confronted by altogether different conditions. The drones are produced without the concourse of the male element, and therefore reproduce the characteristics of their mothers. The male element is strong enough to invariably change the sex of the eggs, and for that reason we might expect it to predominate in the workers, and it so happens. When Doolittle began to keep Italian bees, he had the only ones in his locality. At the beginning what crosses occurred were necessarily first crosses. He tells us that the workers from a black queen crossed to an Italian drone showed the characteristic of the Italian race to a very marked extent. On the other hand, the hybrids from an Italian queen mated to a black drone possessed the traits of the black bees, almost exclusively, some of them, their temper for instance, even exaggerated. The experiments made by Frank Benton, published in Gleanings some eight or ten years ago, gave the same results.

Such being the case it is very important to have drones of good stock. We cannot control the individual drones, and this is not necessary, for there is probably very little difference between the drones of the same colony. What is necessary is to have plenty of drones from our selected colonies and suppress the others as completely as possible.

We come back now to the all important question: What constitutes a good queen? Evidently the one whose workers gather the most honey or give us the most surplus. It does not matter to what their superiority is due. It may be long tongues, it may be longevity, it may be something else. So far as practical or rather financial results are concerned, we want to breed from queens whose colonies have given us the best returns.

Still a few other conditions have to be met; gentleness for instance; a disposition to cling to the combs instead of falling off at the least jar; color for those who care for it. I prefer the lightest, but this is with me a question of locality. All the bees around me are black hybrids, or very dark Italians. The difference of color enables me to detect mismating easily.

Two other considerations are very important to the comb-honey producers but not so much to the extracted-honey men. One of them is the disposition to swarm. It can be easily controlled when working for extracted honey if the directions given in Langstroth revised are followed, including the use of a hive of the proper size. But it is not so with the comb-honey worker. However, as the colonies which refrain from swarming are usually those that give the most surplus, the selection of the best will automatically help some in that direction.

The other is the capping of the cells white. A good deal depends upon the flow, the temperature and other conditions, but after all is considered, the fact remains that some colonies cap their honey much whiter than others. That has some importance with the comb-honey producers, for the honey capped white outsells the other. Needless to say that for the extracted honey apiarists, the color of the capping does not matter at all.

Knoxville, Tenn.

Drone and Worker Comb in a Hive

BY DR. C. C. MILLER.

HOWEVER much we admire the work of the bees under ordinary conditions, their exhibition of skill and intelligence under unusual conditions demands still more our admiration.

A piece of honey comb is a sample of exquisite workmanship, whether it be worker-comb or drone-comb, but the manner of changing from one to the other is a feat of engineering to which human skill can hardly attain. How rapidly the change is made from worker-cells to drone-cells, and how few irregular cells, or accommodation cells, between one kind and the other!

Bees build their combs so that there is plenty of space between them for them to pass over the two opposing surfaces without any interference. Between two worker-combs this space will be about half an inch. But sometimes a meddling beekeeper interferes with their arrangement, and two opposing surfaces are placed too close together. If this be done at a time when the cells contain young larvæ, the brood goes on to completion, but the bees are necessarily dwarfed. The bees, however, take good care that this shall not happen again. Rather than to have the young bees dwarfed in both combs, they decide that the youngsters in one comb shall have plenty of room, and they proceed deliberately to gnaw down to the septum the cells of the opposing side.

The up to-date beekeeper considers it the proper thing to suppress all or nearly all drone comb in the broodnest, but he has not yet trained his bees to understand that this is a desirable thing, and so instead of thinking that a colony or two can rear drones enough for the whole apiary, each colony, at certain times proceeds, so far as it is able, to rear as many drones as it would if not another colony were within a hundred miles.

If drone-comb be lacking in the brood-nest, the bees seem desperate in their efforts to rear drone-brood by hook or by crook. Indeed, some insist that they go so far as to change worker-comb into drone-comb. To do this, however, by gnawing the worker-cells down to the septum, and then upon the unchanged septum to build cells of the larger diameter, is a physical impossibility. For if the septum be a plane, and the walls of the cells perpendicular to it, then those walls must be parallel to each other, and the cells no wider at mouth than at bottom. The only exception to this is when the septum is not a plane, but is curved. In that case the bees not only can, but they must, build cells wider at the mouth than at the bottom. But in order that the cells be enlarged enough to serve as drone-cells, the septum must be very much curved. Such cases are very rare, and the accident of such curving can hardly allow the bees the credit of design in changing from worker-cells to drone-cells. In fact, there really is no *change*, for even if the bees should gnaw the cells down to the base, they would only build again just what was there before.

Moreover, if it were possible for the bees to change worker-comb to drone-comb, examples of it should be common, considering the efforts the bees at times make to have drone-brood; yet plenty of beekeepers of many years experience and observation say they have never observed such a case. When drone-brood is desired, and no drone-comb is found in the brood-nest, the beekeeper not infrequently finds a patch of drone-brood outside the brood-nest, if drone-comb happens to be there. When the brood-chamber is entirely filled with worker-comb, and a super of sections is on the hive, if it happens that a section is not entirely filled with worker-foundation, the bees are quite sure to fill the vacancy with drone-comb, and the queen will come up and lay eggs in it; and if she is prevented from going up by an excluder, the bees will often refrain from storing honey in the drone-cells, leaving them vacant for the expected coming of the queen. Why all this roundabout work? If bees can change worker-comb to drone-comb, why not take the simpler plan of changing a sufficient amount and having it right where it is wanted, in the center of the brood nest?

But bees can and do change drone-comb to worker-comb. Left to their own devices the bees of a swarm build more or less drone-comb. But after a young queen has been reared in the hive and begun laying, drones are neither needed nor wanted, and a large patch of drone-comb in the middle of the brood-nest seems to be only in the way. Why not rear worker-brood in it? But the queen either will not or cannot lay worker-eggs in drone-cells. So the bees proceed to change the drone-cells to worker-cells, at least so far as to make the mouths of the cells of worker size, which seems to answer every purpose. Sometimes a beginner, or even one not a beginner, is puzzled to know what it means that so often he meets with patches of what appear to be drone-cells with very thick margins. The margins are not so thick as they appear, but the cells are partly sealed over so as to reduce the mouth to the proper size for worker-brood. From these cells will emerge in due time young workers that are normal in every respect. The change of drone to worker-comb is much more common than the unobservant beekeeper is likely to think.

Marengo. Ill.

No. 18.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(*Photographs by the author.*)

THE wild cherries are widely distributed over the North American continent, and beekeepers who live in timbered sections may expect to find one or more species within reach. The photographs shown herewith, Figs. 83, 84, are of the wild black cherry, *Prunus serotina*, which is a large tree with reddish brown branches and oblong taper pointed leaves. This tree is common in the woods from Newfoundland, Ontario and Manitoba, south to Florida and Arizona. There is a smaller tree with very similar flowers, the choke cherry, *P. virginiana*, to be found over much the same territory, while the western choke cherry, or western wild cherry, *P. demissa*, ranges from Dakota, Kansas and New Mexico west to California and British Columbia.

The larger tree, *P. serotina*, is also said to occur in Mexico, Peru and Columbia. There is also a varietal form known as the mountain black cherry found in southwestern Virginia, Georgia and Alabama. It is found on the open rocky summits of the higher altitudes. This form is a tree 25 to 35 feet high with very rough bark and drooping branches. The wild red cherry or pigeon cherry, *P. Pennsylvanica*, is common in the northeastern States and secretes nectar freely.

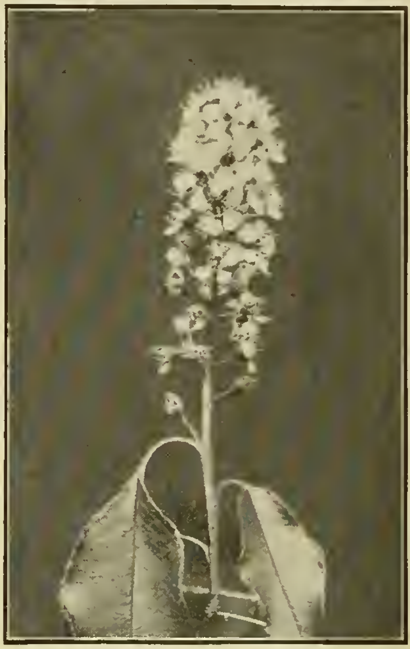


FIG. 84.—SINGLE FLOWER CLUSTER OF WILD CHERRY

Both leaves and seeds of all these forms are poisonous, although the fruit is edible. There seem to be well authenticated cases of poisoning of cattle from eating the leaves, and of children dying from swallowing the seeds. Prof. Pammel, in his book of poisonous plants, gives an extended description of the chemical action in such cases. The poisonous property of all species of cherry leaves, according to authorities quoted there, is due to prussic acid. The poison does not exist as such in the growing plant, but by the action of moisture and a vegetable ferment which exists in the plant a complicated chemical reaction takes place when the leaves are separated from the stem. Wild cherry bark is used to some extent in medicine.

Wild cherries are not often reported

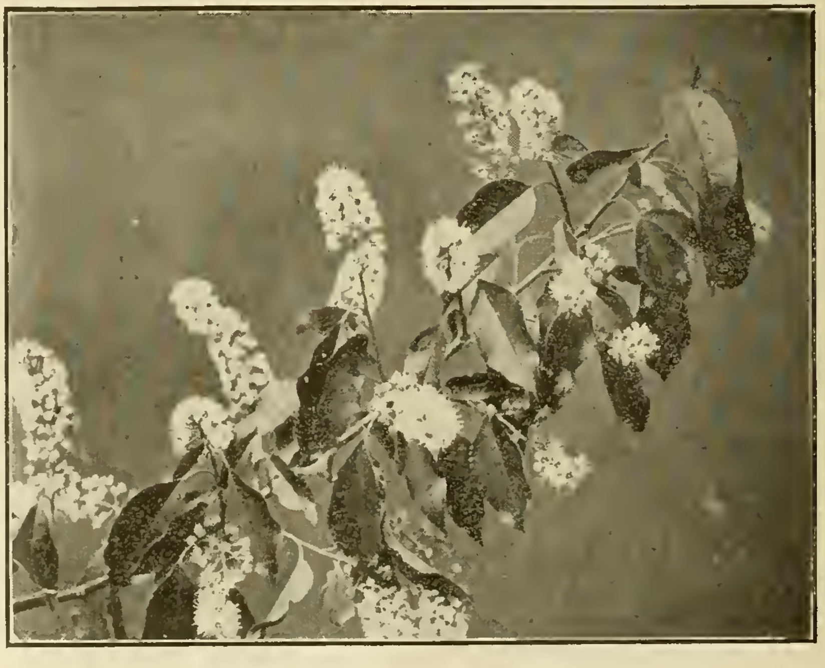


FIG. 83.—BLOSSOMS AND LEAVES OF WILD BLACK CHERRY

as valuable sources of nectar. Richter lists the western choke cherry as a source of honey in California, and Lovell mentions the wild red cherry in the eastern States. The writer has a sample of this honey sent to him from the apiary of W. S. Pangburn, of Jones Co., Iowa, having a distinct cherry taste and bright yellow color. After 2 years it shows no trace of granulation although subject to all changes of temperature of Iowa climate both summer and winter. All, but few of the samples of honey in the collection have candied under similar conditions.

Since in northern States the bloom comes after the blossoms have fallen from the domestic fruits and just before the opening of white clover, it should prove of considerable value where present in quantity.

Atlantic, Iowa.

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A Beesting Victim's Idea of a Bee-Hat

BY DR. G. R. RICHARDSON.

HAVING been told times without number about persons whom bees would not sting under any circumstances, and how grandfather handled bees with his bare hands and never was stung, and that such foolishness as wearing a veil was never thought of, I began to wonder if some of these stories were not on a par with the oft-repeated assertion that father had double teeth all around and was in the habit of cracking hickory nuts and biting cut nails in two. I wondered what a double tooth looked like and what sized nails they had when father was a young man, and also why it is that we no longer have those deep snows that covered the fences out of sight, and finally concluded that most of these stories were told by men who had been eating artificial comb honey and didn't know it.

There is a difference in persons getting stung, and it is not all in knowing how to handle bees, nor is it all in the kind of bees, nor the time of day or state of the honey flow; although all these factors must be understood and taken into consideration if the full enjoyment is to be derived from beekeeping.

I have been laughed at for being afraid of bees, and have been told how they should have been handled, and have had the satisfaction of seeing the bragger with both eyes swollen shut, and so those stories that appear from time to time in the bee-papers in which the smarty gets bitten appeal to me.

I was not sure at the time I received my near-lethal dose whether it was a heart stroke, a snake bite or bee stings, but remembered after it was all over, and in calmer moments, of feeling two stings on my left ankle and also of seeing the bees.

It was a sultry July day and we were going over our bees to see that everything was right. We were standing, one on each side of a hive which was raised up on blocks, as it was in the height of the flow. We were busy. I knew that I had been stung, but did not pay much attention to it; in fact, not as much as usual. I always remove the sting as quickly as possible, having found that it does not swell so badly if removed at once, and that alone may account for the unusual effect that day.

First I noticed a tingling sensation in both feet, but thought it imagination until my hands also began to feel as if asleep, and only then I awoke to the fact that something unusual was happening, and told my wife that I would have to stop. By the time we reached the house I began to see high lights, and in 15 minutes that was all I could see, as both eyes were closed and my throat and tongue were so thick I could speak with difficulty.

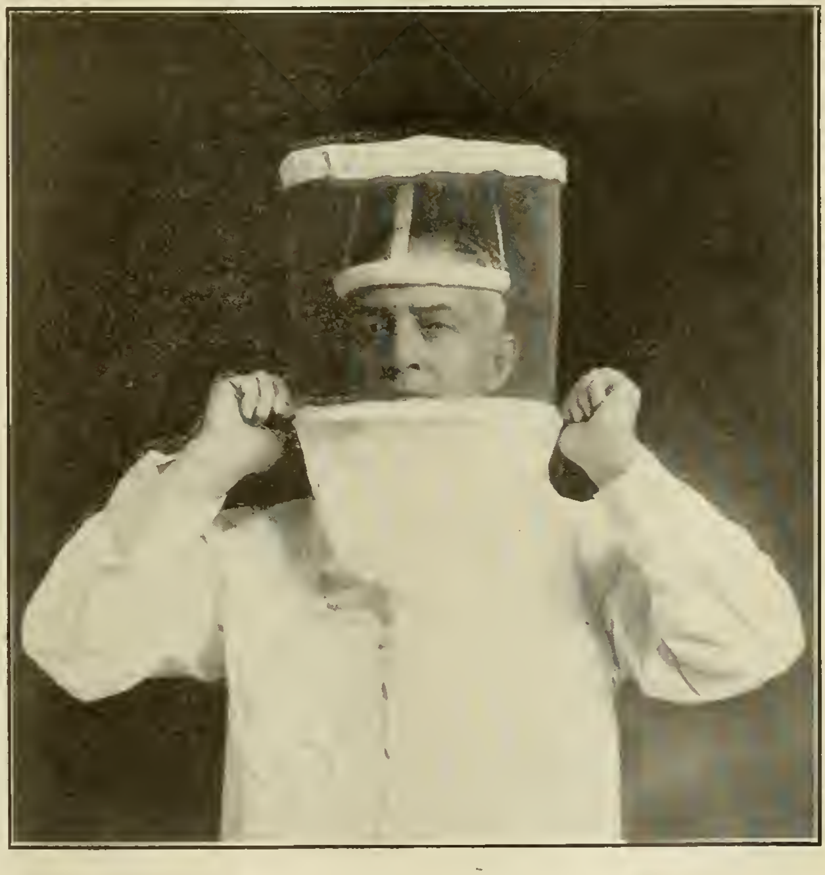
Even then I was not alarmed until I felt for my pulse, and getting no return I asked my wife to put her ear down and see if it had really stopped. She of course told me that it was still beating, but by that time I was too sick to joke any longer, and although I had never fainted in my life, I thought that my time for it had come. I deny that I lost consciousness, but will have to admit that at one time I was not far from it. My wife made strong coffee, but I was too sick to drink it, and thinking of some aspirin we had in the house, she gave me 15 grains. After keeping quiet for some time I felt enough better to drink a cup of coffee, and then the worst was over. I was so full of fire that I did not sleep much the first part of the night, but awoke the next morning fully conscious that I had missed a meal. It did not take me long to make up that, and aside from a swollen ankle I was none the worse for my experience.

The strange part of it was that I had been stung over a dozen times on the same ankle only the week before, and it had not inconvenienced me in the least. The effect of these two stings was certainly out of all proportion to the size of the dose I received.

I know of no reason for this unusual effect unless it was because of being overheated, and yet I have been hotter than I seemed to be at this time. It may have been that, my circulation being more rapid, the poison got action all at once instead of gradually being distributed, and then again there may have been a difference in the virulence of the poison at this particular part of the honey flow.

At any rate, I have concluded to get along without a repetition of this kind of experimentation in the future and with this end in view have put together a uniform which is in part a diving suit, part Ideal, part Coggshall, and part Globe. The headpiece of wire-cloth attached to a discarded office coat of duck, which has been sewed together down the front and cut out at the neck so it is easier to get into. With gauntlet gloves and high shoes, which are laced up outside my trousers' legs, I imagine that if any bee gets at me now it will have to go through, and there is no place it can do that as I sewed it myself and waxed the thread. While I was sewing I was thinking of what a time I had, and would go over it again if it looked at all weak at any place.

I own up that I do get sort of heated up when I wear it for any great length of time, but did any one ever work long at that time of year when there is the most to be done with bees who



THE RICHARDSON BEE-PROOF SUIT

didn't get sort of thawed out? The part of the outfit that I particularly pride myself on is the ventilating apparatus which holds the top of the hat away from my head and at the same time keeps the whole thing from falling around, as a hat that is too large will do, just at the wrong time. It is made of half-inch strips of galvanized iron riveted into the shape and size of a hat band and is covered with outing cloth which makes it more comfortable for the head.

I made two of these uniforms so that if anything happened to one I would have another to put on; but my wife says that I made two because I was afraid the bees would gnaw a hole through the wirecloth and then I would have to stay in the house. In the picture, I am holding the headpiece higher than it is in actual use, so as to show better how it is made, but when down where it should be it is not so top heavy as it looks, and the muslin apron does not come up so as to obstruct the view.

PART OF THE RICHARDSON APIARY

My wife laughs at my pet uniform, but when anything really serious, such as transferring combs from odd sized frames, happens along, she takes in the common sense outfit readily enough.

Our apiary is situated on the top of a hill the height of which may be guessed at by looking at the team of horses at the bottom of the picture, and also by knowing that there are 90 acres in the field of corn in which the team is plowing. The view from this hilltop is certainly grand, and one can scarcely imagine that the picture was taken in the prairie State of Illinois, between locks 4 and 5 on the famous Hennepin canal.

The town of Hennepin on a clear day may be seen in the middle distance, also the valleys of Big Bureau and East Bureau creeks, and then on out to the heavily timbered overflowed lands of the Illinois river.

Sweet clover is abundant, and with plenty of willows to furnish pollen in the spring, pasture lands covered with white clover, dandelion, hound's-tongue (*Cynoglossum officinale*), which has even the vervain on the run, together with persicaria and the swamp flowers, we have all that could be asked for in the way of fall feed to winter on, and a delightful place to spend the hot months of summer.

Princeton, Ill.

The Strittmatter House Apiary

BY F. J. STRITTMATTER.

THE following description is received from F. J. Strittmatter, of Ebensburg, Pa., concerning the Carrolltown house apiary mentioned on page 383, November, 1914, and page 94, March, 1915, of the Bee Journal. This is in reply to the request of Mr. E. G. Carr and others:

Bill of lumber, etc, used in our latest house apiary, 12x24 feet, 2 stories, containing 62 hives for bees, built in solid. Bill does not include any supers or brood-frames, as we had these with our outside equipment.

Forty-two studding, 2x4—12 feet. 26 rafters, 2x4—9 feet. 550 lineal feet 2x4, any length, for sills, plates and odds. 14 joists 2x8—12 feet. 60 lineal feet 2x6, surfaced one side for window sills. 550 hemlock boards for sheeting, etc. 500 feet of flooring. 1200 feet of siding. 150 lineal feet hemlock boards, 10-inch, surfaced two sides, for roof boards over entrances. 150 lineal feet hemlock boards, 6 inch, surfaced two sides, for alighting-boards under entrances. 120 lineal feet hemlock boards, 8-inch, surfaced two sides for brackets to fasten alighting-boards. 550 lineal feet hemlock boards, 9½-inch, surfaced one side for sides and ends of hives. 150 lineal feet hemlock boards, 6-inch, surfaced one side for top boards or edge of hives. 700 lineal feet hemlock boards, 5-inch, surfaced one side for top boards and window frames and corner strips. 150 lineal feet of roofing lath for bracing and odds. 4 rolls of roofing. 900 square feet of red sheeting paper. 900 square feet of tarred sheeting paper. 15 single light windows with 16x30 inch glass. 1 door, hinges and lock.

We have concrete wall and floor in bottom. The wall is built about a foot higher than the floor, and a frame is placed on the level with the top of the wall, about 2 feet wide, on which a smooth floor is laid which forms the bottoms of the hives in the lower story. We have the hives arranged with the frames running parallel with the sides of the building, making the entrance in side of the hive. This makes it more convenient to handle frames and supers.

The hives upstairs are placed on the regular floor. We use spouting on building to keep the water out of the way in times of rain. We have ample room, for all extra supplies needed, in the middle of the building without interfering with the work with the bees.

VIEW FROM HILLTOP, LOOKING TOWARD HENNEPIN AND THE ILLINOIS RIVER—AT THE RICHARDSON APIARY

The cost of labor included building a fence on one side of the apiary ground and making a road about 300 feet.

Our hives in the house apiaries are made to take the regular Hoffman brood-frames the same as we used outside and to take the standard factory 10-frame supers for either comb or extracted honey.

The lumber for this building cost us about $75 at the mill, and the other material including windows, door, paint, roofing, nails, cement for foundation and spouting, etc., cost about $50, making the total cost of material $125, the labor, counting hired help at cost, and my own time, $3.00 per day, cost $145, including about $20 paid for boarding our men part of the time near the job, and we figured $30 for gasoline and wear and tear on automobile, looking after the job and taking our crew back and forth nearly every day, as this building is six miles from home. The above makes a total cost of $300. We sent to a mail order house for the roofing, windows, door, and such things, and saving some money on these.

We used two kinds of sheeting paper; we put this on just ahead of the weather boarding, putting on next the studding, the heavy, regular red sheeting paper and on this the tarred sheeting; the idea being to have the tarred paper make it more secure against mice or other vermin chewing through, and the red paper, lighter in color, to make the building as light as possible inside. Of course, you could use any light colored paper for this.

It is important to have corners cut out of the window lights at all four corners, so bees may get out when you are working with them. We also have galvanized screens on the windows outside, spaced out from facing at top and extending up a little further so bees can crawl up and out and to prevent them getting back in, but these interfere some with their getting out on a cool day, and can be omitted if you are careful not to leave any honey exposed inside when there is no flow.

We had enough extra lumber in about all sizes for stair risers, treads and scaffolding, so this could be left up for the painters. Studdings are placed 24 inches from center to center, and one hive for each space. The windows are just the right width so frames can be set in without cutting out any studding. Entrances are painted different colors so the bees can the better find their own places.

We have all our bees in house apiaries now and would not like to go back to the outside apiaries for several reasons. We find in the first place we can get more work done in the house apiary on account of being able to have things handier as well as more independent of weather. We use all 10-frame hives, having same built in solid in the last two house apiaries we built; while in the first one we put in hives previously nailed up. We run for extracted honey almost exclusively, producing a little comb honey at the home apiary only.

We go over all colonies in the spring as soon as the weather permits to see that all queens are clipped as well as to clean out any dead bees or other refuse that may be in any of them, and note general conditions. We make a more thorough examination at this time than at any other time of the year. In fact, many colonies may not have their brood-nest disturbed again until fall unless we have reason to suspect disease. Of course, if a colony does not progress properly it is examined again to ascertain the trouble. We are careful to place supers on all hives before they seem to be ready for swarming.

I figure that as to cost, while we had to make an extra investment to change to house apiaries, the expense in case of starting a new apiary is very little more for a house apiary than that for chaff hives and a necessary supply house. But of course you would not want to build a house apiary unless you were satisfied that you would want to keep the same location for a number of years and could buy the ground reasonable.

Ebensburg, Pa.

The Greening Method of Swarm Prevention

BY H. B. TURRELL

IN the American Bee Journal for September, 1914, Mr. C. F. Greening has an article in which he tells how he prevents swarming in his apiary. His method as set forth in his article is so simple and so easily followed that one would expect it to be adopted by all beekeepers, provided it works out according to his statement.

We rather expected to see some comment on this method of swarm control, in later issues of the Bee Journal, but so far none have appeared. Would it be too much to ask that you submit the article in question to some of your regular contributors, and ask them to tell us what they think of it? It seems to me, like a great many other things, we read of in bee-keeping "important if true."

For my part, I believe I should rather see more articles such as Mr. Greening contributed than so much about wintering and foulbrood. Wintering is a subject of no especial interest in our latitude, especially cellar wintering, and as this subject, as well as bee diseases is fully covered in the various books on apiculture, and by publications of the State and national governments, it seems that those wishing information concerning such subjects might well be directed to the proper sources of information, and to avoid the endless repetition which we find in the bee journals.

To get back to Mr. Greening, he states that his crop ran to from 150 to 200 pounds per colony. Such a yield must have required good management in addition to any non-swarming method he may have used, *n' est-ce pas?*

Wheatland, Ind.

[The Greening method *was* commented upon in several numbers of the "Questions and Answers Department," especially in the number for May, 1915, page 171. Mr. Greening was a successful man, but perhaps a little emphatic. We believe his method is excellent in the production of extracted honey, though we doubt much its advisability in comb-honey production. We do not like his method of making artificial swarms for the reasons given in that May number.

As to the value of the Greening method, in extracted honey production, we would be glad to hear from those who tried it.

Our correspondent wants us to "avoid endless repetition." This we aim to do. Yet if we were to give only new things, we would have to be constantly perusing the past years of the Journal; for it is astonishing to find how many of the so-called new methods have been published at one time or another and forgotten. Some things bear repeating on account of their value. Many good things, worthy of putting in practice, are read and forgotten.

Mr. Greening died July 1, 1915, and his death was recorded in our October number, page 335.—EDITOR.]

Hiving Bees from Combless Packages—A Suggestion

BY KENNITH HAWKINS.

TROUBLE in keeping many of the bees in packages from *going into the air*, if they are *shaken at once into hives* and not left to go down per *usual directions*, has led me to a new plan, at least *new* to *me*. I don't like the plan of letting the bees go down to brood or combs after opening packages and laying them above in a super, as too often they fail to do so in *reasonable time*. Trouble that way, led me to think of wetting the bees with a sprinkler as in making up queen-mating nuclei, to keep them from flying, and now I do it with all packages, just before opening cages. They *never fly*, and are *at once where* they are *wanted without delay*.

Care must be used not to use too much water, and if the plan has not been already given to beekeepers, I would be glad to see it published, for it is a *bee saver, time saver*, and a *sure method*.

Plainfield, Ill.

Yield of Honey in Southern California

BY J. E. PLEASANTS.

SOUTHERN California's honey yield will be less than half a crop this year. The honey is of good quality, and prices, so far as can be ascertained to date, are considerably in advance of last season. Buyers are in the field trying to make contracts for honey. So far, little has been sold; 6½ cents per pound is offered f. o. b. shipping points for white sage, 6⅛ for orange honey, and 5 cents for amber.

We have had very unusual climatic conditions. Our season might be sized up as a flood followed by a dry year. It rained almost the entire month of January. Much damage was done throughout the State by floods. There was considerable rain in February. The ground was packed by flood waters standing for a considerable length of time. This was followed by an intensely dry spring, with considerable wind, both hot and cold. There was practically no spring rain, nights cold, days warm and dry. This made a very unfavorable condition for nectar flow and for crops generally. Many other crops are light here, some almost a failure.

It is the first season I have ever seen here, during a period of perhaps 40 years, where so much rain has produced so little honey. But, after all, the distribution of a season's rainfall counts even more than the precipitation.

The season has also proven a bad one for all bee diseases. We have European foulbrood a plenty. Sacbrood and paralysis are unusually prevalent. The combination of diseases is keeping us busy here.

Orange, Calif.

MISCELLANEOUS NEWS ITEMS

A Farmer's Beekeepers' Club.—Co-operation is everywhere, but it remains with Bruce Anderson to be the first County Agent to form a beekeepers' club in order to foster beekeeping, and they need it in North Carolina where Mr. Anderson is working. In fact, we never think of North Carolina as much of a bee State, although in reality it is among the first for the number of colonies of bees. So far nearly all the bees have been left in box-hives. But Bruce Anderson isn't the kind of a fellow who is going to be content with conditions as they are now. He wants improvement. In order to join his county beekeepers' club the beekeeper has to agree to 17 different rules. These are as follows:

1. Each member must have one or more colonies of bees in frame hives, a smoker and veil.
2. Study bulletins and literature on beekeeping.
3. Subscribe to a reliable bee journal.
4. Attend meetings of beekeepers.
5. Watch the brood-nest for loss of queen, disease and time to put on supers.
6. Have two or more supers for each colony, spring count.
7. Prevent swarming by giving colonies plenty storage room for surplus honey, laying room for queen and ventilation.
8. Requeen colonies after honey flow every two years from the best honey-gathering colonies.
9. Secure Italians from breeders of high honey-yielding bees.
10. Provide each colony in October with 25 pounds or more of honey or syrup, if they have not that much.
11. Give bees plenty of protection in winter from the cold and winds.
12. Keep records of colonies, cost of running apiary and honey yield for each colony.
13. Make report to County Agent at the end of the season.
14. Cooperate with other members in buying supplies and marketing honey.
15. Put on the market only good honey well graded.
16. Follow instructions of the club leader.
17. Make an exhibit of bees and of honey at the Winston-Salem Fair, 1916.

Some of these days North Carolina will be considered more seriously as a beekeeping State. The South is diversifying.

◆

Honey Prices in Switzerland.—A peculiar statement comes from Consul General F. B. Keene, of Zurich, Switzerland. He reports that, out of 29 articles of food and household consumption, all have increased in price since the beginning of the war, from 3 to 175 percent, except one, honey. According to this authority honey in Switzerland has decreased in price, from 77,2 centimes per kilo, to 73,3 centimes ($6.75 per cwt. to $6.41). This is for extracted honey, of course, as they produce no other.

◆

A Suggestion.—In reply to your request for suggestions, I would like to hear of the experience of successful wax-producers. R. Deimer.

Chico, Calif.

We suppose our enquirer wants to hear of the cost of wax, to the bees. The honey consumed for wax-production has been estimated all the way from one pound to 30 pounds for each pound of wax, with the majority putting it at from 7 to 12 pounds. Several producers have announced their intention to make a practical test by feeding honey to produce combs. Have any positive results been attained?

◆

Hyphen Between Beekeeping Words.—To a short criticism of the newly hyphenated words decided upon by the Phillips-Root-Miller-Dadant agreement Dr. Miller replies as follows:

"You say 'I also feel like objecting to 'comb-honey' as long as 'comb honey' is intelligible and not confounded with something else.' With that way of deciding I'm afraid there would be trouble. One might think of some way in which there would be confounding and another might not; so one would use hyphen and the other not. 'He proceeded to comb honey out of his hair, and when he did comb honey he found it was not comb honey but extracted.' That's strained of course (although not strained honey), but it's simpler and better to follow the general rule, that when two nouns are joined together a hyphen be used, or else run together the two words as one."

◆

Beekeeping Industry of New Zealand.—Honeybees were first introduced into New Zealand in 1839, and in 1880 and 1882 the Italian, Cyprian, and other bees were brought in. Modern methods of beekeeping were introduced in 1878, principally from the United States. The industry is now supported by New Zealand laws and regulations. In 1906 the government established an experimental apiary, where between 40 and 50 students are trained annually.

According to law no common box-hives are allowed in this dominion, the hive in most general use being the American Langstroth. It would seem that here should be a fine opening for beekeeping supplies, and it would seem wise for American makers of such wares to get in touch with the beekeeping associations.

Since 1907 disease among bees has been kept under control, and the business in general is prosperous, with the result that in 1915 there were in the dominion 11,200 beekeepers who owned 72,340 hives, with an estimated production valued at $250,000. It is expected the output will be doubled within the next three or four years.

During the year 224,000 pounds of honey were exported to England, and it is anticipated that this trade will be more than doubled during 1916. All honey is inspected and graded by government experts before it is allowed to be exported.

Con. Gen. Alfred A. Winslow.

Auckland, New Zealand.

◆

A Massachusetts Meeting.—A most successful meeting of the Hampshire, Hampden, Franklin Beekeepers' Association was held in the Board of Trade rooms, Springfield, on May 13. This, the annual meeting, was postponed from March 16, when it was to have been held in Amherst in conjunction with the beekeeping meetings during Farmers' Week.

Much the same program was followed. The election of officers resulted as follows: President, O. M. Smith; Vice-President, A. C. Andrews, Rev. D. D. Gorton, and L. R. Smith; Secretary-Treasurer, Burton N. Gates, Amherst. Unanimous vote re-established the annual fee to 50 cents per annum.

Among the papers read was the annual address of the president, O. M. Smith, who presented numerous "Timely Suggestions to Beekeepers." By way of a report of progress for the committee on honey labels and standard packages, Dr. B. N. Gates, chairman, explained what constituted an attractive label

Mention was also made of the standardization of honey containers, particularly small glass containers. After the report, discussion followed wherein it was particularly emphasized that beekeepers give more and more attention to supplying their customers 16 ounces for a pound package and 8 ounces for a half pound package. It is being considered by the association to adopt a label which the members of the association may use. This attached to their products indicates their affiliation with the local society, and is thought to be of advantage in selling local products.

A most interesting address followed by A. W. Yates, of Hartford, Conn., on the "Spring Handling of Bees."

A committee consisting of the president as chairman, the three vice-presidents, and the secretary-treasurer was appointed to wait upon the managers of the agricultural fairs for the purpose of obtaining proper recognition of beekeepers for displays of beekeeping products at these fairs. It was left to the executive committee and the secretary particularly to arrange for the society to hear Mr. C. P. Dadant, of Hamilton, Ill., when he visits the East next August. This will constitute the field meeting of the association.

The meeting adjourned shortly before 5:00 o'clock, p m., there having been a good attendance.

B. N. Gates, *Sec.*

Michigan Fairs and Premiums.—The West Michigan State Fair at Grand Rapids has increased the premium list in the Apiarian Department from $60 in 1915 to $600 in 1916. The Michigan State Fair at Detroit has increased the premium list from $132 in 1915 to $575 in 1916. This has been the result of the Michigan State Beekeepers' Cooperation and many members supporting the special committee in this work. This illustrates just one instance of how beekeepers' associations can do much effective work.

Not content with this, however, a special committee of the association after a large amount of work has formulated a model list of premiums for fairs together with a table of standards by which such premiums are to be awarded. This table has been adopted by both the Michigan Fair Associations. Mr. E. D. Townsend is to be the judge at the State Fair which is to be held Sept. 4 to 13.

We urge all Michigan beekeepers to write to the secretary of their association, Mr. F. E. Millen at East Lansing. He will be glad to put you in touch with the proper fair authorities. Every live beekeeper should be an exhibitor. It is not only a recreation, but it is the very best way of advertising your product.

Chicago Field Meet.—The field meet of the Chicago-Northwestern Beekeepers' Association will be held at the home of W. W. Faulkner, 3000 North Cicero Ave., Chicago, Ill., Saturday, July 15.

Many things combine to make this an ideal place for a meeting of beekeepers. Besides being entertained by one of the most hospitable families in Illinois, we will meet Mr. Faulkner, Sr., who is probably the oldest and one of the most successful beekeepers in the United States. Mr. Faulkner, Sr., is in his 100th year, and was born among the bees in Scotland. The family recently sold a large portion of their beerange for over $260,000. They still retain the buildings and ten acres of the best part of the farm, worth another $50,000.

The house stands on a ridge that was once the shore of Lake Chicago, which at one time covered the entire site of the present city. It can be reached by trolley from anywhere in the city for a 5-cent fare. A basket picnic will be served by the queens that do not swarm, which we hope will attract enough drones to furnish us with an intellectual feast as well.

Bumblebees Wanted by Dr. Burton N. Gates.—I take pleasure in thanking the beekeepers of the country who so kindly sent me numerous specimens, upwards of a hundred, in response to my appeal for bumblebees taken in or about beehives last year. Although this large collection has been of great value to the student, further specimens are needed, particularly from the West and South.

I hope, therefore, that the beekeepers will mail me in a secure package either bumblebees or other insects caught robbing hives or taken dead from inside of hives. They should be prepared for shipment in a strong box and bear the name and address of the sender in order that due credit may be given. All kindly write me stating the circumstances and date of the capture. These notes which I am receiving from the beekeepers are exceedingly interesting and valuable. Burton N. Gates.

Amherst, Mass.

Shipping Bees to Canada.—The Canadian Beekeeper sends us the following information, which will prove of use to all shippers of bees from the United States as well as to the Canadian purchasers:

"A number of bee importers have been complaining about their shipments of bees being delayed by the Customs Department. There is no duty on bees and queens coming into Canada, but special attention should be given to the Customs requirements."

Mr. Morley Pettit, Government Apiarist for the Province of Ontario, writes Canadian Beekeeper as follows:

"I have had some rather serious complaints from beekeepers importing bees from the southern States, stating that their bees had been delayed by the Customs authorities, both at the border and at the Port of Entry. I took this matter up with the Customs Department, and in reply have the statement 'That if the importers would take the matter up with the collectors at the various ports and produce the invoices and declarations promptly, or even before the arrival of the shipments in question, there should be no delay in so far as the Customs is concerned.

1. "Invoices should be made out in duplicate.

2. "They should contain two entries of the cost of the goods, fair market value as sold for home consumption at the time shipped, and selling price to the purchaser in Canada.

3. "They should contain place and date and signature at the bottom.

4. "'The Certificate Form M' should be either typewritten or printed on the lower part or back of the invoice."

Blank copies of invoices may be obtained by Canadian importers from the different Custom Houses.

TELLING THE BEES

Among the old superstitions there was one which required that the bees be told and put in mourning when some one died in the family. Otherwise they dwindled and left. The following poem on this subject by one of the most celebrated American writers of the XIXth century is probably known to only a few of our younger readers:

Here is the place; right over the hill,
Runs the path I took
You can see the gap in the old wall still,
And the stepping-stones in the shallow brook.

There is the house, with the gate red-barred,
And the poplars tall.
And the barn's brown length and the cattle yard,
And the white horns tossing above the wall.

There are the beehives ranged in the sun;
And down by the brink
Of the brook are her pure flowers, weed-o'errun;
Pansy and daffodil, rose and pink.

A year has gone, as the tortoise goes,
Heavy and slow;
And the same rose blows and the same sun glows,
And the same brook sings of a year ago

There's the same sweet-clover smell in the breeze,
And the June sun warm
Tangles his wings of fire in the trees,
Setting, as then, over Fernside farm.

I mind me how, with a lover's care,
From my Sunday coat
I brushed off the burrs and smoothed my hair,
And cooled at the brookside my brow and throat.

Since we parted, a month had passed,
To love, a year;
Down through the beeches I looked at last,
On the little red gate and the well-sweep near.

I can see it all now, the slantwise rain
Of light through the leaves;
The sundown's blaze on her window pane—
The blooms of her roses under the eaves

Just the same as a month before—
The house and the trees,
The barn's brown gable, the vine by the door;
Nothing changed but the hives of bees.

Before them, under the garden wall,
Forward and back,
Went drearily singing the chore-girl small
Draping each hive with a shred of black

Trembling, I listened; the Summer sun
Had the chill of snow;
For I knew she was telling the bees of one
Gone on the journey we all must go!

Then I said to myself: "My Mary weeps
For the dead today;
Haply her blind old grandsire sleeps
The fret and pain of his age away."

But her dog whined low; on the doorway sill,
With his cane to his chin,
The old man sat, and the chore-girl still
Sung to the bees stealing out and in.

And the song she was singing ever since
In my ear sounds on:
"Stay at home, pretty bees, fly not hence,
Mistress Mary is dead and gone."
—*John Greenleaf Whittier*

A Summer Meeting of Beekeepers.—In accordance with the action of the beekeepers at the summer meeting held at Hamilton, Illinois last year, the committee appointed has arranged for another meeting to be held at Dubuque, Iowa, on Aug. 1 and 2. It is to be hoped that a permanent organization of the beekeepers of the upper Mississippi valley may be effected, and that these valuable meetings may be continued. The Commercial Club of Dubuque has promised royal entertainment for all who attend. The meetings will be held in beautiful Union Park, one of the beauty spots along the Mississippi. If the weather is inclement the meetings will be held in the park pavilion.

These meetings are of vital importance to the beekeepers as they help to attract public attention to the use of honey, in addition to the value of information gained by the personal contact of honey producers. Dubuque is a city of several thousand population and a honey market that has hardly been touched. If more city meetings were held so as to bring the use of honey before the general public at home it would not be long before the demand for honey would be doubled and trebled.

Every beekeeper who can possibly make arrangements to attend this meeting will gain much of value besides having a royal good time. Come, bring your wives and families and help make this one of the best meetings ever held.

N. E. France,
A. L. Kildow,
C. E. Bartholomew,
Committee.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Feeding

We have only been keeping bees for six years, so don't know much about it yet, but we have increased the number of our colonies from 34 to 237, and have also added a second boy to the family. We "weighed our bees in" last fall as heavy as usual, but lost some by *breeding and starvation* in the cellar, and have had to feed extensively for the first time this season.

I intend to try some of Dr. Miller's queens this year, if we don't have to spend every spare penny for sugar. We have tried to get soiled sugar, but absolutely without success. Have you any sure place where you can get it? About the only bit of information I can give is to those sister beekeepers who use an Alexander or Ideal bee-veil, and that is when the cloth parts of either become soiled it can be put in the tub and washed. Use a brush to scrub the top, and after drying the skirt it can be ironed, but not the crown of the Alexander.

I enjoy reading Dr. Miller's confessed mistakes and troubles in "Fifty Years Among the Bees" as much as the useful hints and bee lore.

Florence A. Robinson.
Pellston, Mich.

More than ever, with the price of sugar going skyward, it is important to learn the lesson that we should make our plans in advance to have on hand each spring extra combs of sealed honey, say two such combs for each colony. Not only do we need such combs as a safeguard against starving. When the white-honey harvest opens, before any honey is stored in the supers, the bees will fill all vacancies in the brood-chamber. If, now, we have saved up sealed combs from the preceding year—and they may just as well be of dark fall honey—we can put them in the brood-chamber, and the white honey will at once go into the super. The result is that we swap just so much dark honey for light.

You are not likely to find soiled sugar in ordinary groceries where sugar is not handled on a large scale. Sometimes you can get it from the railroads, when a bag of sugar has been spilled in a freight car; but your best chance is with one of the big houses that handle sugar on a large scale, such as Sears, Roebuck & Co., or Montgomery Ward & Co., in Chicago

Honey Plants—Shipping Bees

1. Is foxglove poisonous to bees? Is the honey from these flowers injurious either to bees or man?

2. Are the huckleberry, salmonberry, thimbleberry (all grow wild here) and shallot good bee-plants?

3. What area of clover, white, sweet, and alsike is required to give a surplus from one or two colonies?

4. In how many days journey will bees come through alive, and what are the best conditions for the hive to stand a journey of say 15 days?

5. Would the following idea be any improvement on the present type of hive fitting: Instead of having a wood and metal rabbet and self spacing frames, to have a steel or iron rod on which the end top-bars of the frames could rest, the rod having ¼-inch pins on it, and correct distances to space the frames, the rods to have a lever handle at one end, and by raising the handle the pins would be moved over, leaving all frames in the hive hanging loose; this would combine the advantage of metal spaced frames and loose hanging as required, and to prevent the frames from moving slightly when turned over, the underside of the frames could be notched where it rests on bars; the bars would have a screw thread at each end to connect to outside handle on one side and nut on the other side. This would simplify hive making, as rabbets would not be necessary.

Lilian G. Bland.
Quatsino, B. C.

1. There is probably no reason to believe that foxglove honey is poisonous either for bees or people.

2. Thimbleberry or raspberry is one of the very best honey plants. Likely salmonberry is good also, as that is the name by which the white-flowering raspberry is known in some places. Huckleberry may be fairly good, although it is doubtful if any great surplus from it has ever been reported.

3. Nobody knows. Perhaps an acre; possibly a fourth of that.

4. Different factors make much difference in the number of days travel a colony can endure. Hot weather is more unfavorable than cool; and a ride on a boat would be very different from one with much jarring. Under favorable circumstances a journey of a month might be none too long; while conditions might be so unfavorable that a week would prove too long. To stand a journey of 15 days the frames should contain plenty of stores, yet they should not be so heavy as to risk breaking down; there should be abundant ventilation; water should be contained in sponges or otherwise, unless water can be sprinkled upon the bees at proper intervals; and the hive should be so placed that any jarring may be received endwise and not sidewise. Unless the combs are pretty old they should be strengthened by wiring. This is in reply to your question as to the condition of the *hive*; yet nowadays the tendency is toward shipping bees in packages without combs, so of course without hives, and that may be the better way.

5. It is not very safe to judge just how well a thing would work with bees until it has had an actual trial; but it is rather doubtful if your plan would prove very satisfactory.

A Beginner

Last summer was my first experience with bees. A neighbor gave me three swarms; they were as late as June 30, July 1 and 3. They seemed to do well at first, but as I only had two hives (the third in a box with slats across), I examined the two other hives, which had appeared in good shape. I found the combs almost empty in one hive, and the other swarm starved.

The weather during that time was not fit to gather honey, and not knowing the bees were robbing, I had had the entrance wide open. I now began to feed syrup above the brood to the colonies left, and I soon found out they were still robbing the bees. I saved them by feeding every evening until I took them into the cellar. I fed them all winter. They seemed to do well until along in February, when one colony had diarrhea, and finally died. The other colony died in March.

1. Do you think my bees were robbed in the fall?

2. Does the old queen leave the hive before the young one leaves the cell?

3. Can I use, for a new swarm, old combs that are slightly moldy at the bottom?

4. I have some old combs that are all worker-combs excepting one end of one comb that is about two inches wide by five inches long, which is drone-comb. Is this drone-comb enough for one hive?

5. Is June 15 too late to save a swarm? If it is, do you kill the queen that leaves the hive and return the bees to the hive they left?

6. I have a large space of ground that I want to put in flower beds. What kind do you advise me to put in? There is a little white flower they use for border. Does it yield nectar, and do you know the name of it? Do the gilliflower and gladiolus yield honey?

7. Can I use the shallow extracting frames in the Langstroth hives? The brood-chamber is fitted with a cover 8 inches deep, or must I use supers to these hives? [Mrs.] Chas. White.

North Prairie, Wis.

ANSWERS.

1. They were probably robbed.

2. When a prime, or first, swarm issues, the old queen goes with the swarm, and the swarming takes place generally about the time the first queen-cell is sealed, and the young queen will not emerge from her cell until a week or so after the prime swarm issues. In the case of an afterswarm, a young queen goes with the swarm, and another young queen or several of them are ready to emerge about as soon as the swarm has left.

3. Yes; but there is a little danger that the swarm may not be willing to stay on such combs unless it be induced to do so by the presence of a comb containing some brood. But if you give the moldy combs into the care of a strong colony for a few days, they will be cleaned up so that the swarm will promptly accept them. They can be put in the brood-chamber of the strong colony, or in a hive-body under or over the hive.

4. Yes, or more than enough.

5. No, it is not too late, although if the season should be poor you may have to feed for winter. If you wish, however, you can kill the queen, return the swarm, and destroy all queen-cells but one.

6. All the flowers you are likely to raise in a flower-bed are not likely to amount to much unless you have half an acre or more. Mignonette is one of the best. The little white flower used for borders may be sweet alyssum, on which bees may be seen at work; but whether they get much from it is another question. Stock (or gilliflower) and gladiolus are likely not of much value as honey-plants.

7. The orthodox depth of the frame for a Langstroth hive is 9⅛ inches, and it will not be satisfactory to use one very much shallower. You will need supers, although you may use as a super a hive-body the same size as the brood-chamber if you use in it combs of the same size as those in the brood-chamber.

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My First Experience With Bees

While I was visiting my daughters, at Orchards, Wash., in 1913, I bought some hives in the flat, with the idea of beginning beekeeping. The putting up of the first hive was a Chinese puzzle, but after that the others went together quite easily. Our first swarm was bought of a neighbor and brought home the first week in July.

After a few weeks I placed another hive on the first, with starters in the frames. Before the first of September both were solid full of comb honey.

Our principal wild honey plants were fireweed, salal, mountain mulberry, spirea, blackberry, wild gooseberry, syringa, vetch and lupine. Vetch is wild in western Oregon and Washington, and grows everywhere. I found five different varieties. One a tiny dwarf only a few inches high with a single lavender blossom. Another variety climbed on the bushes higher than my head, and had a large cluster of dark purple blossoms. One variety had a yellow blossom. The summers are very pleasant, there being no rain from the middle of June until October; from the middle of December until the middle of March it rains *all* the time.

Orchards is a township of prune orchards, and is 14 miles from Portland, Oreg., which is farther north on the map than Portland, Maine; but the winter that I was there (1913) the roses bloomed until the middle of February, then there was a freeze which stopped them a few weeks. In April they bloomed as they do in Connecticut in June.

Western Oregon and western Washington are noted for their large fir trees. Unless the land has been cleared it is stump land, and nearly everything has a background of large spindles and stumps with a heavy tangle of brush and undergrowth.

[Mrs.] E. P. Flint.

Rockville, Conn.

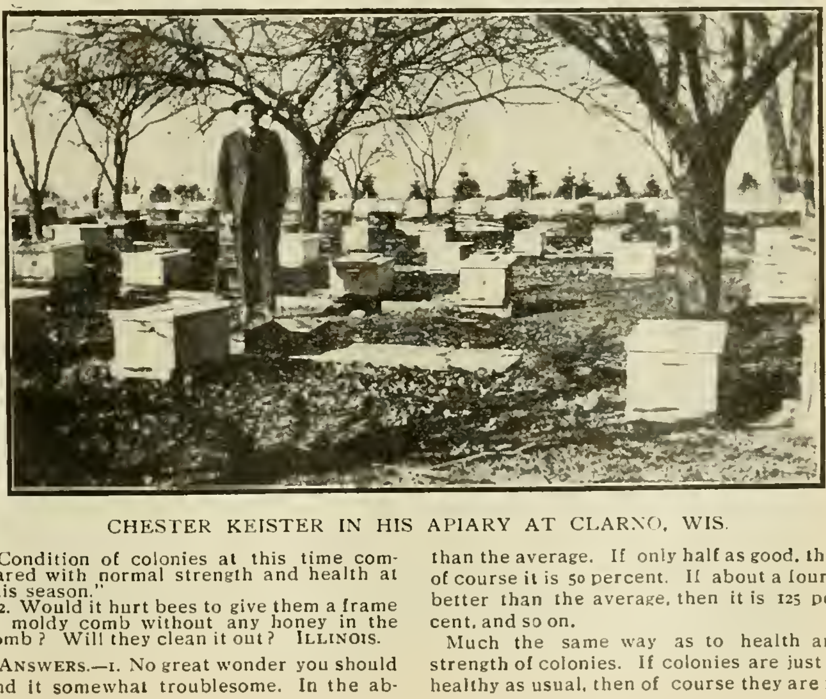
DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
Dr. C. C. Miller, Marengo, Ill.
He does not answer bee-keeping questions by mail.

Data for United States Agricultural Department

1. United States Department of Agriculture asked me to fill out a schedule pertaining to condition of colonies in this township. There are two questions I do not understand, nor where to get the data for the honey-plants, and what the percent was before this year. The questions are as follows: "Condition of honey-plants compared with normal condition at this season," and "Condition of colonies at this time compared with normal strength and health at this season."

2. Would it hurt bees to give them a frame of moldy comb without any honey in the comb? Will they clean it out? Illinois.



CHESTER KEISTER IN HIS APIARY AT CLARNO, WIS.

Answers.—1. No great wonder you should find it somewhat troublesome. In the absence of sufficient data, you can only guess.

With regard to the first question, you cannot measure the condition of the honey-plants in feet and inches, nor yet in pints and quarts. But if you have been on the watch for several years—if you haven't you may be able to learn something about it from others—you can tell whether you think the present condition is better or worse than the average. If only half as good, then of course it is 50 percent. If about a fourth better than the average, then it is 125 percent, and so on.

Much the same way as to health and strength of colonies. If colonies are just as healthy as usual, then of course they are 100 percent as to health. If they are below the average as to health, then you will mark them 75 percent, 90 percent, or whatever it may be, but don't ask me to say how you will tell when the colonies of an apiary are half as healthy as the average, so as to be marked 50 percent. I don't know how You'll just have to guess the best you know how. As to strength, you can be more definite if you have kept a record for a number of years and know that during that time the average has been a certain number of frames of brood at a certain time, say 5 frames. If this year it's 5½ frames, then it will be 110 percent. If it's 4 it will be 80 percent, and so on. If you have no such record, you can only guess, and I don't begrudge you the job.

2. Yes, it will be all right if no foulbrood is in the comb.

Robbers—King-Birds—Waxmoth

1. I had six colonies of bees and one of them was not working like the rest I saw a bee go in, and in about a minute or two bees came out clung together, and rolled off on the ground, and then both flew away, and in about five minutes 25 or 30 bees went in, carrying pollen on their feet; then some came out and flew away again, while another two came out fighting Can you tell me what is the matter?

2. Will a bee-bird destroy a colony of bees or will they just destroy the drones?

3. As I was inspecting one of my swarms this spring, I found some white worms on top of the frames; they were about half an inch long. Can you tell me what kind of a worm it was?

4. What does a honeybee get from dandelion? Do they get any honey?

5. Do bees gather honey from apple blossoms?

6. What do bees get from pumpkin, squash, cucumber, and melon blossoms?

7 Do bees work on black and red raspberries, and what do they get?

PENNSYLVANIA.

ANSWERS.—1. Bees from other hives try to enter and steal honey, and are pounced upon by the guards at the entrance.

2. King-birds, or bee-birds, have the reputation of killing both drones and workers, although it is said that the workers are not swallowed, but the juices are extracted and the carcasses spit out.

3. It was probably the larva of the waxmoth, commonly called wax-worm.

4 Both honey and pollen, lots of both.

5 Yes.

6. Both nectar and pollen.

7. Yes; they get both nectar and pollen.

MISSOURI BEES ARE BOOMING THIS YEAR, THE FIRST CROP FOR A GOOD WHILE—S. J. KNOX APIARY AT BOWERS' MILL, MO.

Honey-Plants of the South—Transferring

1. Do bees gather honey from California and Japanese privet?

2 Which kind of poplar is the honey-plant?

3. Where can I get a book on honey-plants of the South?

4. I hived a big swarm and put on a super at once, but bees are laying out. Do you think they will swarm again?

5. The swarm I hived came out of a box-hive. Would it be all right to transfer the bees from the box-hive into a frame hive? The box-hive is full of honey. TEXAS.

ANSWERS.—1. I don't know, but have an impression that privet is not an important honey-plant.

2. *Liriodendron tulipifera* is the botanical name of a honey-tree that goes under the name of poplar, also whitewood, and tulip-tree.

3. You may find what you want by inquiring of the Agricultural College of your State.

4. Not very likely.

5 Yes, although the honey is in the way in transferring.

Ants—Distance Bees Go

1. What causes ants and moths to get into hives?

2. How far have bees been known to go to gather honey?

3. Should bees have fresh water given to them every day? KANSAS

ANSWERS.—1. Ants enter hives because it is a warm place to have their nests, and sometimes to get honey or bees. Moths enter to lay eggs where their young can have their proper food, wax.

3. I think the farthest ever reported was seven miles; but probably none of your bees go farther than two or three miles.

3 No; keep a tub standing with cork-chips in it, and fill it with water only as often as it needs replenishing.

Miscellaneous Questions

1. Should I have double-walled hives here in northwestern Ohio?

2. When should queens be clipped?

3. When should drone-traps be put on the hives?

4. Should all the drones be destroyed?

5. What is slumgum?

6. What is the best book for the beginner? OHIO.

ANSWERS.—1. Opinions differ; but I think the majority in our region prefer single-walled hives.

2. They may be clipped any time after beginning to lay; and it is a good plan to make a business of hunting up the queen in each colony every year, at least a little before there's any danger of swarming, and clipping any that are found unclipped.

3. That depends. A good many, like myself, never trap drones. They prefer to destroy them in the form of brood, or, still better, to suppress all, or nearly all, drone-comb. But if you want to trap them after they are mature, you can have traps on at any time when there are drones to be trapped.

4 All but those that you consider your best drones in one or a few colonies.

5 The residue that is left after wax is pressed out of combs.

6. There are a number that are good, the two most in use being Dadant's-Langstroth and Root's A B C and X Y Z.

Shipping Bees from the South, Etc.

1 Would it have any effect on bees if I had them shipped to me from the South; that is, the climate conditions?

2. Will two different kinds of bees bother each other if kept in one apiary?

3. Can honey be expected from a colony that was started from a pound of bees in the spring?

4. How far apart should beehives be placed?

5. How would you recommend wintering bees as far north as I am?

6. If in the cellar should any screen be placed in front of entrance? MINNESOTA.

ANSWERS.—1 Other things being equal, the shorter the distance bees are shipped the better, but the bees are no better or worse for the southern climate.

2. If you mean will bees of different kinds quarrel, no. Several kinds will live just as peacefully in the same apiary as if they were all of the same kind. If you mean whether they will bother about mixing, yes. You can keep only one kind in your apiary if you want your bees to keep pure.

3. That's asking a good deal of them; but it is not at all impossible with a good honey flow, and especially a good late flow.

4. That depends. On an entirely level surface, with no trees or other objects, 10 feet is none too close. If there are trees, buildings, or other objects by which the bees can mark their locality, then all that is needed is have enough room between hives so that the beekeeper can work comfortably, say two or three feet. But if you want to economize room, set your hives in pairs, the two hives of the same pair almost touching, and then a space of two feet or more between that pair and the next pair.

5. In the cellar,

6. No; unless it be a screen of wire-cloth having three meshes to the inch. That will bar the passage of mice, but not bees.

Feeding Capped Honey to Bees

1. If you had combs of old honey, either in hives where bees had died or if you had combs of honey that were kept over, would you uncap the honey before putting it in the hives where there were bees? Do you believe bees would ever uncap this old waxy honey and clean it out of these combs?

2 In forming colonies with bees in pound packages, would you give them honey capped or uncapped?

3 I notice where a colony dies that robber bees will rob out around the brood-nest and leave combs of honey nearly or quite full at the sides and along the top bars. This honey is not granulated altogther, but there seems to be some reason why the bees do not take it while it is capped. NEBRASKA.

ANSWERS.—1. I don't believe there will be any trouble but what the bees will use that honey all right, and there will be no need of your uncapping it either. You will probably find that you can use it anywhere for the bees that you cou'd use any other honey.

2 It will be all right to give it either capped or uncapped

3. I never knew robbers to leave honey because it was sealed except under one condition. Sometimes it happens that a comb of sealed honey is given more room, so that the bees build fresh cells over the cappings and fill them with honey. In that case they will never uncap the old honey, but will starve with it in the cells, and robbers will not uncap it either.

Queenless Colony—Rearing Queens

One of my colonies went into winter quarters heavy with honey and bees, but now I find about half a teacup of bees, ample stores, no queen, and the whole thing as good as dead. The honey in the combs has a watery surface, looking very much like a mess. What is the trouble?

2. One of my colonies has brood in a fair quantity, no eggs, and I could not find any queen, but found a few queen-cells. I destroyed all but one, which was good sized and not yet capped Is it too early for this colony to rear a good queen?

3. What about combs that are quite white with mold; should I use them?

PENNSVLVANIA.

ANSWERS.—1. Looks a good deal as if the colony had lost its queen so early last fall or summer that nearly all the bees have died off from old age.

2 Doubtful about the value of that queen, although she may be fair if it happened that the bees were busy gathering during the five days the young queen was fed.

3. That white mold doesn't seem to matter.

Wintering in Oregon

What is the best cover for wintering in this locality which has a rainfall varying from 60 to 100 inches with little or no frost or snow? OREGON.

ANSWER.—I don't know of anything better than the one I use, described in "Fifty Years Among the Bees." A cover of ⅜-inch stuff with the grain running one way, another the same with the grain running the other way, a ⅜-inch space between them made by strips ⅜ by ⅞, and a tin, or still better, zinc cover over all.

Building Up Colonies—Handling Nuclei

1. Would it be advisable to put new swarms in hives with old combs? (the bees from this hive died during winter from lack of stores; one-third of the cells still have bees in them)

2. How do you handle a nucleus?

3. In dividing for increase, is it better to take queen from original colony and let the original colony rear a new one?

4. I have a hive of mixed bees to which I gave an Italian queen last fall (colony was strong, but the bees were old; the colony was queenless some time before I noticed it). It is rather weak this spring. How should I handle it?

5. Would it pay to build up an apiary by buying 2-frame nuclei with queen?

6 Are the no beeway sections as well liked in the markets as the beeway sections?

7. Is it a good plan to help bees increase to feed syrup in the spring before blossoms come out? PENNSYLVANIA.

ANSWERS.—1. With decaying dead bees in the combs, there is danger that a swarm put into such a hive would desert. If a frame of brood were given, the bees might not desert. The better way will be to have the combs cleaned out before they are given to a swarm. Put them in a hive-body under or over a strong colony, and in a few days they will be cleaned out.

2. Your question is so vague that I don't know just what you mean. Perhaps you want to know what shall be done to help a nucleus to build up. If strong enough, with time enough it will build up with no help from you except that you shall give it combs filled with foundation either as fast as needed or all at once. If you want to help it to build up faster, a good way is to swap from time to time one of its combs containing a good share of young brood and eggs for one from a strong colony containing sealed brood well advanced. If your question means something else, please come again.

3. It is best that the queen remain on the old stand where the whole field-force will be. But in that case the queenless part will be in a discouraged condition, with no field-bees and no honey coming in, so the queen it rears is not likely to be of the best So we compromise: Leave the queen with the part put on the new stand; the queenless part, being on the old stand, will have plenty of honey coming in, and will be in good shape to have queen-cells of the best sort. A week later, when the feeding of the royal larvæ will be over, make the two hives swap places, and all will be lovely.

4. Give it a frame of brood with adhering bees from a colony having at least five combs well filled with brood, and continue the same thing every ten days or two weeks as long as necessary.

5. Yes, it's a good way.

6. By "no-beeway sections" you probably mean plain sections. They may be liked as well in some markets, but I think generally not

7. I never do it myself, and I doubt its being a good thing for you. Of course, you must feed if there's the least danger of starving, and then honey is much better than syrup.

Inducing Queen to Work in Super—Pure Stock

1. I have five colonies that are strong in brood and bees, and I would like to keep them from swarming. I put the supers on the last of March with what bait sections I had, and they removed the honey from the sections to the frames below. How can I induce them to go to work in the supers for I want to get as much comb honey as possible? Would you advise putting an empty hive-body below to give the queen plenty of room?

2. I would like to introduce pure Italians the last of the season, and am thinking of experimenting some in queen-rearing. I would like to know if I could keep pure bees by starting with two or more colonies and keeping the drones trapped in the colonies I do not wish to breed from?

MISSOURI.

ANSWERS.—1. Like enough your colonies have done about the best they could Putting on supers until there is a sufficient flow will not hurry up storing, although the honey that the bees carried down out of the sections probably did some good in helping to build up. As soon as the harvest begins the likelihood is that you will see good work in the sections. Putting an empty hive-body below is a good thing to be done early if the queen has not room enough without it, but by the time this gets into print the season will be so far along that giving more brood room below would do harm instead of good, so far as work in supers is concerned.

2. If there are no other bees anywhere near you, you can keep your stock pure in the way you propose. The probability, however, is that you are not thus isolated, and at least part of your young queens will be mismated, the danger being the greater in proportion to the number and nearness of bees surrounding you.

Hiving Swarms—Queens

1. What would be the result if after hiving a swarm I would later remove the bottom of the hive and set it on the old colony? Would they unite?

2 Can hives be set too close together? If not how far apart should they be placed?

3. What advantages have the ten-frame hives over the eight?

4 When hiving a swarm, should I let it set there a few days before I move it to the apiary?

5. How old does a queen get?

6 What is the cause when a colony has little black bees? They cannot fly. Is it the queen's fault?

7. What causes the queen to die in winter?

8. Are bees that work on red clover more profitable than those that do not?

9. Can you smoke the bees too much, or is it good for them? OHIO.

ANSWERS.—1, They would unite, but if it was done in less than ten days after swarming they might swarm again, unless an excluder were used. It would work better

A RATHER LONG SWARM CAUGHT BY F. F. PORTER, OF OAKLAND, CALIF.

to put the old hive over the new. In that case you should use an excluder if you unite in less than ten days. After ten days, if you cut out queen-cells you can unite without excluder.

2. If trees, buildings, or other objects are present to help the bees to mark the location, they may be set as close together as will allow you to work comfortably between them. If there are no such objects, then it is better to have a space of perhaps five feet to separate the hives, or pairs of hives

3. Perhaps the greatest advantage is that there is room for more stores, making very much less danger of starving in winter or spring.

4. Never; the sooner it is moved where it is to stay the better. If left over night, and then moved, there is danger of loss of bees.

5. Generally 2 or 3 years old; in rare cases even 5 or 6 years.

6. Possibly a case of paralysis. Some think the queen to blame; some not.

7. Likely old age. Some queens are older at a year than others at two.

8. Yes.

9. Yes, indeed, you can hurt by too much smoke. It's never any benefit to the bees; and you should never smoke any more than just enough to keep them under subjection.

Transferring—Decoy Hives—Wild Bees

1. What can I do with bees in old-fashioned hives? The bees are working and seem fairly strong.
2. How many gallons of bees should there be to constitute a colony strong enough to pay?
3. Is there a satisfactory decoy hive; if so, how is it made and used?
4. How can I proceed to find wild bees?

INDIANA.

ANSWERS.—1. Leave them as they are until they swarm; hive the swarm in a movable-frame hive, setting it on the old stand with the old hive close beside it; three weeks later all the worker-brood will be hatched out, when you can break up the old hive, adding the bees to the swarm.

2. Early enough in the season a colony of 10,000 bees might be satisfactory enough, while in the harvest 40,000 would not be considered so very strong. So you see it varies according to the time in the season. If you want to get it in quarts, count about 5000 bees to the quart.

3. Yes, any hive makes a good decoy hive; all the better if some old honey-comb is in it; only you must look out that the comb doesn't get to be wormy. The decoy hive may be set anywhere, in or out of the apiary; some put them in crotches of trees in the woods.

4. It would be going outside the scope of this department to give full instruction for finding wild bees; but the chief thing is to use honey as a bait, watch what direction the bees take when they leave the bait, moving the bait and gradually following up the line of flight until the home of the bees is reached, using also cross-lining.

When to Add a Super

My bees are working early and late now. I have some honey in the brood-chamber. Would it be advisable to put on a super before much honey is stored. If one was added at such a time would the bees continue storing in the hive until full before starting to store in the super, or would they start in the super as soon as added?

MISSOURI.

ANSWER.—The bees are likely to continue filling up all the space available before beginning in the super, but it is well to put on supers a little before they are really needed. The old rule was to put them on when bits of white wax are seen along the top-bars, but that is rather late. As you are probably in a clover region, a good rule is to give supers just as soon as you see the first blossom on white clover, although there may be no storing in supers until ten days later.

Bees Tearing Combs

I have a strong colony of Italian bees which has some honey and a good laying queen. For the last two weeks they have been tearing very large holes in empty combs and carrying it out of the hive. The movable combs have plenty of space between them. Why do they do this? OHIO.

ANSWER.—Without seeing it one can only guess. A fair guess is that the comb is so offensive by being badly molded or in some other way, that they are discouraged about cleaning it out.

REPORTS AND EXPERIENCES

Fires Injure Crop

The bees wintered well last winter, but the spring was hard on them. January and February were mild; March very rough; April dry, cold and windy.

We had a forest fire; it burnt for three weeks; the wind blew the smoke one day from one direction, the next day from another, so hard sometimes that a man could not see a thing five steps away. That was hard on the bees, too; they had to stay in during that time. The fire destroyed all the early low honey-producing plants and many million feet of timber.

May was dry until the 15th; since that time we have had showers nearly every day, and now everything is just booming.

The way I introduce my queens: When I notice a queenless colony I catch my extra queen, open the queenless colony and hold the queen by the wings on top of the best occupied frame. Directly comes a bee and salutes her majesty, gives her a drop of food, fans her wings; the whole colony changes to a different tone; the nearest bees coming swarming, fanning their wings for happiness, and sometimes even the new-born babies do the same; then I let the queen loose, cover up the hive, and she is introduced, and the queen attends to her job at once.

I tried the cage method, the smoke method and the daubing method, and still I had to lose some, but my last method works successfully. I have never lost any queens since then. I hope to use this method henceforth. PETER SCHAFFHAUSER.

Havelock, N. C., May 18

[To our mind the foregoing letter from our good friend Mr. Schaffhauser illustrates the correctness of the statement made by our learned Swiss correspondent, Mr. Spuhler, in his article on introduction of queens, page 160: "In every case the temper of the bees plays a very important role. If they are in good humor, everything goes well......" Evidently the queens introduced by Mr Schaffhauser in so simple a way had to deal with bees in good humor. We have seen many cases where the queen so introduced would have been treated as a robber. Does it not look to you as if the temper of the bees be really at the bottom of all success or failure in queen introduction?—ED.]

Brush for Painting Foundation

I have found that if a brush is prepared for painting foundation as I have described, that it will be further improved by cutting out about one-third or more of the hair lengthwise of the brush; that is, only the center of the brush, more properly speaking, thinning out the hair so that it will be of a uniform thickness from end to end lengthwise. If the hair of the brush is longer through the center of the bottom than at the ends, it should be trimmed with a shears square across all the length of the brush. EDWARD HASSINGER, JR

Greenville, Wis.

To Stop Robbing

The following method has never failed to stop robbing for me. Lay two boards across the top of the hive with the ends projecting about two feet in front. Over this spread a blanket or old carpet. The carpet is fastened tight against the sides and back of the hive, leaving a dark space in front. Since all possible light is shut out from in front the robbers are unable to find their way to the entrance of the hive readily, while the bees which belong there will go in without trouble. J. H. MORRIS.

Kansas City, Mo., Jan. 28.

The California Crop

The honey crop in southern California is a disappointment to most beekeepers. No rain since March, and cool, cloudy weather has cut the crop very short. Orange honey not over one-third of a crop. Sage is not yielding at all well, and is sure to fall away below a crop. Buckwheat (wild) is blooming, but bees are getting very little honey from it. I think the crop will not exceed one-half at present. L. L. ANDREWS.

Corona, Calif., June 3.

North Carolina Report

This has been a trying year for local beemen. Our spring losses ran about 25 percent for the county. Then up to May the first bees were starving. During May poplar, berries and clovers yielded lightly. My yard of 11 colonies (no winter loss; 8 were packed in quadruple cases) have gathered some excellent clover honey (white and crimson). Very little swarming has occurred until lately, and it is light yet. Some yards visited have gotten hardly any surplus. We are on the eve of our sourwood flow, and of course are anxious. It has yielded hardly any for the past two seasons. Frequent rains have fallen for two weeks. BRUCE ANDERSON.

Salem, N. C., June 10.

Abundance of White Clover, Yet Prospects Not the Best

At present there is more white clover in bloom than I have ever seen during any of the best seasons in this locality. Under normal weather conditions there would consequently be a heavy honey-flow. But this is not exactly the case, and I suppose that cool nights cause a drawback. White clover seems to yield the most honey only when days and nights are warm, with enough rain to supply the ground with sufficient moisture. On account of prevailing cool weather during all the spring, bees did not build up quickly, especially being short of stores as a consequence of the poor season of 1915.

For some time bees have been storing honey in the extracting supers (8 frame Langstroth), and while they should be ready for extracting by this time, the best are only a little more than half filled. So far, we are free from foulbrood.

St. Meinrad, Ind., June 4.

A Glimpse from South Dakota

I do not believe in putting flowers on a man's grave, but rather in giving him a bouquet while he is living.

I see that Mr. Francis Jager, of Minnesota, has been elected president of the National Beekeepers' Association, and for the benefit of some of the readers of this paper, I want to say that I had the privilege of meeting Mr.

Jager at the Iowa State meeting in Des Moines, of hearing him talk, of sitting with him during the lunch hour, of going to his train with him, and it made a deep impression on my mind, which stays with me.

I venture the assertion that he is one of the most practical and thoroughly up to date men in the country, and it is a blessing to us all to know that he is in a State that is doing more for apiculture than any other State.

Dr. Phillips is also the right man in the right place, and I trust that with these two men working in perfect harmony we shall shortly reap some great results. With Mr. Jager as president of the National, we shall all feel an interest in it and shall want to boost it. R A MORGAN.

Vermillion, S. Dak., April 8.

More Disease in California

I with the rest have had the same trouble that my neighbor, Mr. Miner, of Fowler, Calif., had with his bees. *Nosema apis* Some of the bees are *pinched up*, others *spiny*, others *wabbly* or *shaky*. They crawl out of the hive and wander off to die. Some hives cast out sick bees as an act of house cleaning, and the very bees that act as police to cast out the lepers are the sick bees of tomorrow. The queen sometimes seems to get the disease and dies. The brood dies from disease or is chilled (I think it is chilled). I tried Mr. Poppleton's remedy, and found it severe, somewhat like cutting a man's head off to cure rheumatism.

I did not like this mode of curing the trouble. I consulted my neighbor beekeepers, who told me to put sulphur on the alighting-boards. I tried the plan with indifferent success; observing that sulphur had a good effect, but that the mode of using it was at fault. About this time I saw men fighting mildew on grapes and red spiders on fruit trees by blowing fine flour of sulphur over the vines and trees during the warmest part of the day, so as to get the best use of the sulphur for their purpose.

I got the inspiration to try blowing a fine cloud of flour or sublimated sulphur into the entrance of each hive. I think that my nephew and I had 150 sick colonies at that time; in fact, the whole apiary of nearly 300 colonies seemed in a very demoralized condition; the bees crawling over the ground in all directions and dying by the thousands. We used a machine that is used here on the ranch to sulphur the vines and trees. We blew in quite a blast of fine sulphur into each hive about twice a week. We treated the whole apiary. It did not cause the brood to die like the Poppleton method did, but the bees got better all at once, and seemed well in about three weeks We had a return of the disease in a few colonies, but the sulphur spray cured all of them.

The sulphur seemed to do the most good when used during the hottest period of the day, preferably above 90 degrees Fahr. I believe the sun heat has something to do with the good effect of the sulphur.

Selma, Calif. O. S. DAVIS.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

FINEST Italian Queens. Send for booklet. Jay Smith, 1159 DeWolfe St., Vincennes, Ind.

PHELPS' Golden Italian Queens will please you.

FINE three-banded Italian queens. Circular and price list free. J. L. Leath, Corinth, Miss.

RHODE ISLAND northern-bred Ital. queens, $1.00. Circular. O. E. Tulip, Arlington, R. I.

TELL several thousand people what you have for sale with a few words in this department.

FOR SALE—Untested Golden Italian queens 60c each J. F. Michael, Winchester, Ind.

DOOLITTLE & CLARK'S untested queens $1.00 each; $5.00 for 6; per dozen, $9 00. Marietta, N. Y.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PHELPS' Golden Italian Bees are hustlers

READY now 1-lb. 3-band Italian bees with queen, $1 65 2-fr. nuclei with queen, $2.25. Rosedale Apiaries. J. B. Marshall, Big Bend, La.

NORTHERN BRED Italian queens of the E. E. Mott strain. Unt queens, 75c for July and on. Send for free list. Earl W. Mott, Glenwood, Mich.

FOR SALE—Tested hybrid queens by return mail at 25c each. Peter Schaffhauser, Havelock, N. C.

3-BAND ITALIAN Queens bred for business Untested, 50c each Whitt & Lovejoy, Sinking Creek Apiaries, Gimlet, Ky.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr, Berclair, Tex.

GOLDEN ITALIAN QUEENS, no better honey gatherers anywhere at any price. Untested, $1 00. Tested, $1 50. Wallace R. Beaver, Lincoln, Ill.

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FOR SALE—Bright Italian queens at 55c each, or $6.00 per dozen. Safe arrival and satisfaction guaranteed. T. J. Talley, Rt. 3, Greenville, Ala.

THREE-BANDED Italian queens. Prices: One, 75c; 12 for $8 00. Tested, $1 25 each. Write for prices on nuclei and full colonies. J. F. Diemer, Liberty, Mo.

FOR SALE—200 strong colonies with extracting equipment Unlimited range, continuous honey flow. No disease J. O. Hallman, Unadilla, Ga.

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BRIGHT ITALIAN Queens at 60c each; $6.00 per doz; $50 per 100. Safe arrival and satisfaction guaranteed. W. W. Talley, Rt 4 Greenville, Ala.

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FOR SALE—10-acre fruit farm, near town, well improved; ideal location for bees. Will sell cheap. Address, R. C. Hugg, Burlington, Iowa.

QUEENS—3-banded Italians untested, 50c each. We guarantee safe arrival and satisfaction or your money refunded. Sinking Creek Apiaries, Gimlet, Ky.

GOLDEN Italian queens, select tested, $1 25. Tested, $1.00. Untested, 60c; 12, $.700. Select untested, 70c; 12, $8.00. No foulbrood. D. T. Gaster, Rt. 2, Randleman, N. C.

LEATHER COLORED "Nutmeg strain" of queens, $1.00; doz., $10. Tested, $1 50. Special price on large lots. Return mail. A. W. Yates, 3 Chapman St., Hartford, Conn.

A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need, Only 15 cents per line each insertion.

CHOICE Italian, Carniolan or Caucasian queens, Untested, 75c. Tested, $1.25. Breeding queens, $2.50. Virgins, 40c each; 3 for $1.00. C. W. Finch, 1151 Ogden Ave., Chicago, Ill. Phone Haymarket 3384.

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GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
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FOR SALE—Good Italian queens, untested, 75c; tested, $1.00; nuclei, 2-frame, $3 00; 1-lb. package, $2.00; 2-lb. package, $3.00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon, 1904 Park Ave., Little Rock, Ark.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

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CARNIOLAN, golden, and 3-banded Italian queens. Tested, $1.00. Untested, 75c; 6, $4.20; 12, $7.80. ½-lb. bees, 75c; 1-lb. $1.25. Nuclei, per frame, $1.25. No disease; everything guaranteed. Write for price list. C. B. Bankston, Buffalo, Leon Co. Tex.

AN established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

GOLDEN Italian Queens bred strictly for business that produce a strong race of bees as honey gatherers. Untested 75c each; 6 for $4.25; 12, $8.00. Safe arrival, prompt delivery, and satisfaction guaranteed. L. J. Dunn, Box 338, J. R.R. 6, San Jose, Calif.

GRAY CAUCASIANS—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1 00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. H. W. Fulmer, Box 10, Andalusia, Pa.

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CARNIOLAN GOLDEN and three-banded Italians. One untested, 85c; 6, $4 80. Tested, 1, $1.25; 6, $7.20. Breeders, $4 00. Bees by the lb., $1.25 per lb. Nuclei, 1 fr., $1 75; 2 fr., $2 75; 3 fr., $3.50, without queen. Full colonies in A. I. Root hives with Hoffman frames with queen, 8-fr. hive, $7 50; 10-fr., $8 00.
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CARNIOLAN, Golden and Three-Banded Italian queens from April to October. Tested, $1.00 each; 6, $5 40; 12, $10.20. Select tested $1.25 each; 12, $13.80. Untested, 75c each; 6, $4.20; 12, $7.80. Select untested, 85c each; 6, $4.80; 12, $9.00 Breeders, $3.00 to $5.00. Virgins, 50c each; 6, $2.50; 12, $4 00. Bees, 1-lb., $1.25; 2 lbs. $2.25; ½ lb., 75c. Nuclei, 1 frame, $1.25; 2 frames, $2.25; 3 fr., $3 00. Full colonies with tested queens, 8 fr., $6.50; 10 frame, $7.00. No disease, safe delivery and satisfaction guaranteed. Money must accompany the order. Write for price list.
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Hives, supers, frames, sections, comb foundation, section-presses, foundation-fasteners, queen-excluders, queen, and drone traps, swarm-catchers, feeders, honey and wax extractors, capping melters, honey-knives, honey-tanks, honey-packages, shipping-cases, bee-escapes, bee-veils, bee-gloves, bee-brushes, smokers—in short, everything the beekeeper requires for the proper conduct of an apiary.

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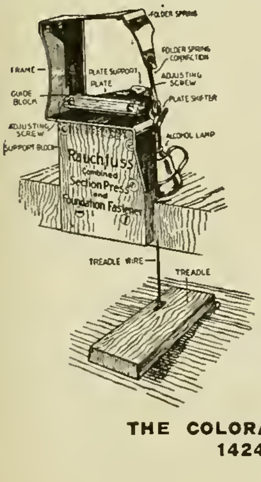


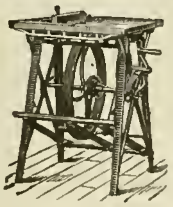
Make More Profit by Reducing Cost of Production

Comb-honey producers can put up their sections complete in less than half the time with a **Rauchfuss combined section-press and foundation fastener.** Now used by hundreds of Western beekeepers who would not think to be without it any more.

It is guaranteed to do more and better work than any other device on the market. Your money back if not entirely satisfactory. Made for 4¼x4¼ and also for 4x5 sections.

Price, $3.00 complete with lamp and treadle, delivered, postpaid, anywhere in the United States. Write for 68-page illustrated catalog of the best Bee-supplies made.

THE COLORADO HONEY PRODUCERS' ASSOCIATION
1424 Market Street, Denver, Colorado



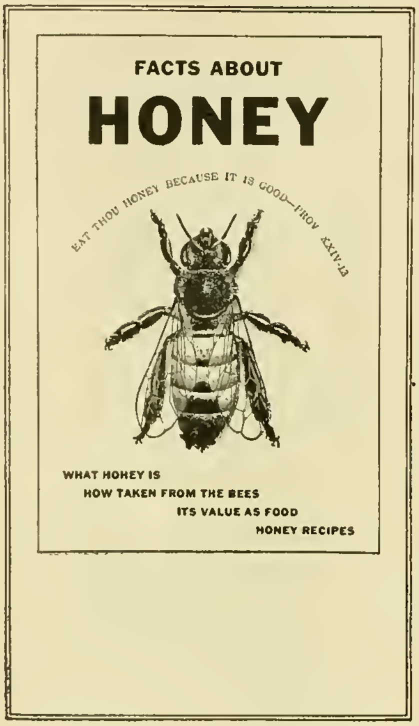
BARNES' Foot-Power Machinery

Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

FACTS ABOUT HONEY



FACTS ABOUT
HONEY

EAT THOU HONEY BECAUSE IT IS GOOD—PROV. XXIV-13

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the "Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " "	9.00
30 " "	.75	2000 " " "	17.00
50 copies, postage extra	.75	5000 " " "	40.00
100 " " "	1.25	10,000 " " "	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

American Bee Journal, - - - - - - Hamilton, Illinois.

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

Italian Queens—Three-Banded

We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never have had. Our prices are as follows: Untested queens, $1.00; $10 per dozen. Tested, $1.25 each; $12 per dozen. Select tested, $2.00 each; $20 per dozen. Breeding queens, $5.00 each. Special prices on large orders. Our customers must be pleased. Safe arrival guaranteed. Send check with orders to

J. W. TAYLOR & SON
Dept. F, Box No. 25, Beeville, Bee Co., Texas
Prices on nuclei on request.

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

PRICES—Untested, April, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

START THE SEASON RIGHT

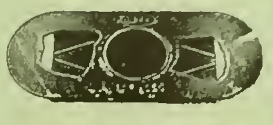
By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE
SAVES
HONEY
TIME
MONEY



For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST

BEE SUPPLIES

Best Sections, Best Shipping Cases
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

Queens and Bees
FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only. Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5.00 each. One pound package bees, $1.25; 25 packages, $1.00 each; 2-pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2.75 each.
Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

WHEN ORDERING SUPPLIES

Remember we carry a full stock and sell at the lowest catalog price. Two lines of rail road—Maine Central and G and Trunk. Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Me.
J. B MASON, Manager

CYPRESS LASTS PRACTICALLY FOREVER

CYPRESS BY TEST
Substitutes by Talk

CYPRESS "THE WOOD ETERNAL"

THE PROOF?—2 LETTERS FROM BEEMEN:

"Our correspondent makes serious complaints against··········and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter," (Etc.)—and here's another:

"Mr. ———, of ———, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE BOTTOMS."

Is there value to you in an endurance test of 45 years in greenhouse sash? It is reported to us that sash made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868 are STILL DOING SERVICE.

IT WILL SERVE YOU AS WELL and save you the nuisance and expense of repairs and replacements.

The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you to an endurance test of 30 or 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good ordinary business sense.

WRITE US FOR VOL. I. OF THE FAMOUS CYPRESS POCKET LIBRARY WITH FULL U. S. GOVERNMENT REPORT ON "THE WOOD ETERNAL."

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., and
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DO YOU WANT
Your Bee Supplies Shipped Promptly?

We carry four to six carloads of the finest BEEWARE on hand at all times, and can fill your orders without delay. BEE-HIVES, SECTIONS, SHIPPING CASES, TIN CANS, and all other Bee Supplies, also

DADANT'S FOUNDATION

by return freight, mail or express. We have forty years' experience and thousands of satisfied customers. Are you one of them?

DADANT & SONS, Hamilton, Illinois.
Dear Sirs:—The box of foundation arrived a few days ago in fine condition. I have kept bees for over thirty years, and have purchased foundation from many firms, and must say that your foundation is the nicest that I have ever used, and I wish to thank you for the prompt shipment and large amount of wax you secured for me.
Yours truly,
Alburg, Vt., May 3, 1916.
A. W. DARBY.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

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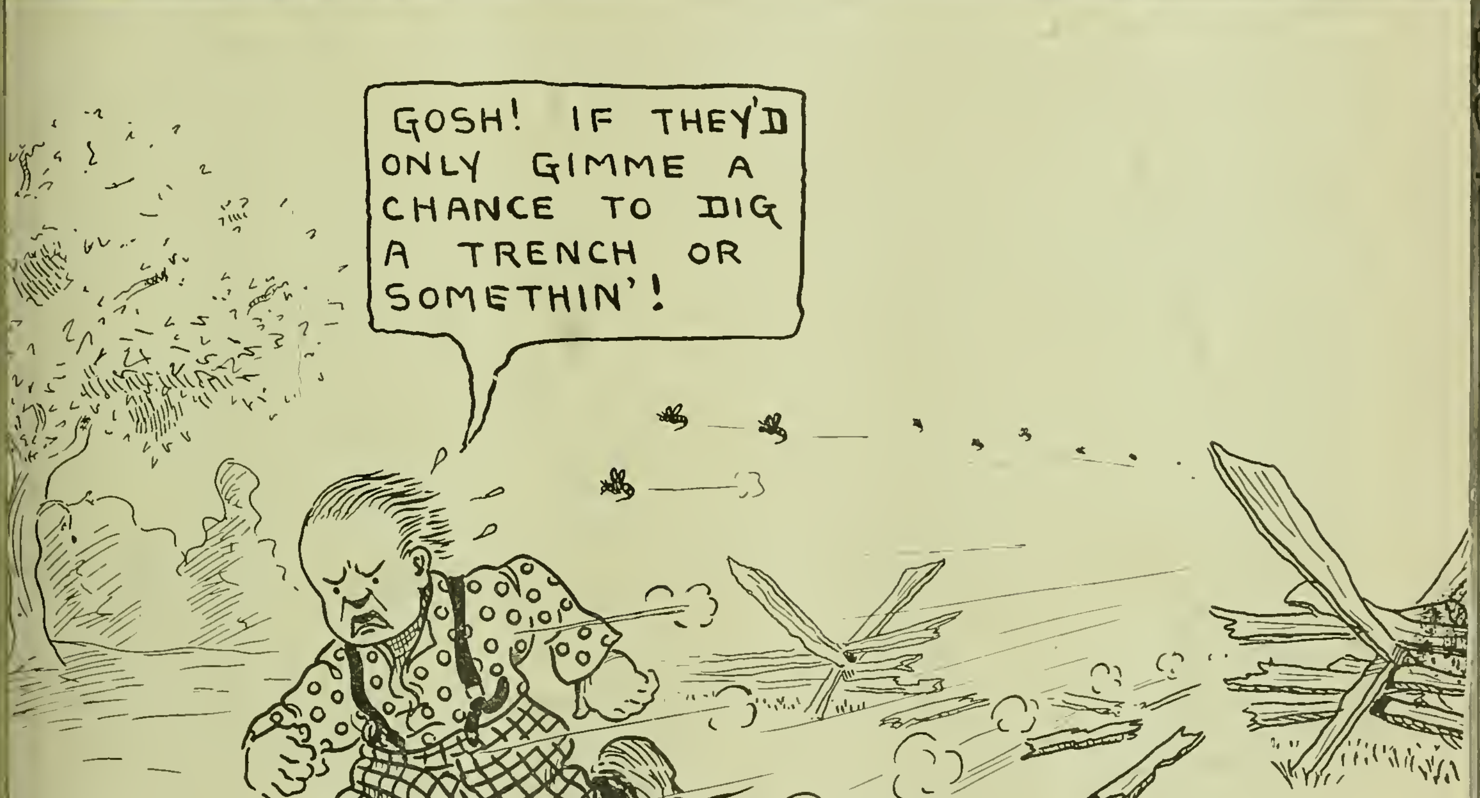
AUGUST. 1916

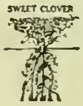

GOSH! IF THEY'D ONLY GIMME A CHANCE TO DIG A TRENCH OR SOMETHIN'!
REX FORREST

How I First Found Out How Far a Bee Will Go in Search of Flowers or Any Other Blooming Thing!

BEES AND HIVES

If you are in need of supplies or bees shipped promptly, write us. Our stock is complete, no delays. Chaff and single walled hives. Bees by the pound, nucleus or full colonies. Untested queens, $1.00. Tested, $1 25. Catalog free.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.



Unhulled and Scarified Hulled
WHITE SWEET
CLOVER
YOUNG-RANDOLPH SEED CO., OWOSSO, MICH.

Bee-Supplies

LET US FIGURE WITH YOU

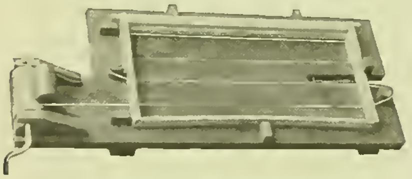
We know we can satisfy you on quality. Write for catalog.

C.C.CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

Northern Bred Italian Queens

More hardy than Southern bred. Try them once. Untested, 75c. Sel. tested, $1.50. Plans for beginners, "How to Introduce Queens and Increase," 25 cents.

E. E. MOTT, GLENWOOD, MICH.



WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2 00.

G. W. Wright Company, Azusa, Calif.

OUR TEXAS BEES

Having locations where I can rear bees almost the year around, I am prepared to furnish you the very best stock of bees and queens at prices where you can afford to buy and build up those weak colonies for the honey season. My pound packages are fine for making increase at a reasonable price. One pound package, $1.50; 2-pound packages, $2.50; 10-pound lots, $13; 100 pounds for $120. Queens shipped with pound packages at 75 cents each. By mail at $9.00 per dozen. Special prices to dealers in large lots.

WM. ATCHLEY, Mathis, Texas
"The Texas Beeman"

EVERY FRUIT GROWER

Who wants up-to-date, valuable information on the vital problems of the fruit industry, such as Spraying, Pruning, Cultivating, Packing, Marketing, etc., should subscribe to

BETTER FRUIT

and begin with the January issue, our Special Spraying Annual. Subscription price $1.00 per year in advance.

BETTER FRUIT PUBLISHING COMPANY
Hood River, Oregon

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

YOU DON'T WAIT FOR MONEY WHEN YOU SHIP MUTH YOUR HONEY

We Remit the Day Shipments Arrive.

We are in the market to buy FANCY AND NUMBER ONE WHITE COMB HONEY, in no-drip glass front cases. Tell us what you have to offer and name your price delivered here.

Will also buy—
White Clover extracted and Amber extracted.
A few cars of California Water White Sage.
A few cars of California Orange Blossom.

When offering extracted honey mail us a sample and give your lowest price delivered here, we buy every time you name a good price.

We do beeswax rendering; ship us your old combs and cappings. Write us for terms.

THE FRED. W. MUTH CO.
"THE BUSY BEE MEN"
204 Walnut Street. CINCINNATI, O.

FOR SALE

My good will and line of Bee Suppiles with hardware stock in connection, in a town of 1800; doing business from $8000 to $12,000 per year. The best chance for the right party to make money. Reason for selling, ill health. Write or call.

H. S. DUBY & SON, St. Anne, Ill.

BEEKEEPERS' SUPPLIES

Sold at a reduction. Best sections, dovetail hives, foundation, and all goods for the beekeeper. Second-hand 60-lb. cans, like new, 25c per case. Give me a trial order.

PRICES FREE

W. D. SOPER
325 South Park Ave., Jackson, Mich.

BEE SAFETY—HOW?

By ordering Murry's queens. I have testimonials on file that my strain of bees are strongly resistant to European foulbrood, Isle-of-Wight disease and paralysis. Plenty of queens ready to ship on short notice from now until Nov. 1st. Safe arrival and satisfaction guaranteed. No disease of any kind in my apiaries. Three-banded Italians and Goldens. Untested, 1 for 75c; six for $4.00. Any number over that 62½c each. Tested 1 for $1.00; six for $5.00. Over that $10 per doz.

H. D. MURRY, Mathis, Texas

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. The best all-purpose bee.

H. W. FULMER
Box 10, Andalusia, Pa.

Q-U-E-E-N-S AT 50c

These queens are guaranteed to be as good as money can buy They are bred by the same methods and same care as the high priced ones. They are bred from imported mothers, the best in the world, and will produce bees that are the best for honey gathering, gentleness and are not inclined to swarm.

	1	6	12	25	50	100
Untested....$	.50	$3.00	$ 6 00	$11.75	$22.50	$43 75
Select unt...	.65	3.50	6 75	12.50		
Tested......	1.00	5.50	10 00			
Select test..	1.50	8.50	16.00			

We guarantee that all queens will reach you in good condition, to be purely mated, and to give perfect satisfaction.

All orders filled at once.

L. L. FOREHAND
Fort Deposit, Alabama

Q-U-E-E-N-S

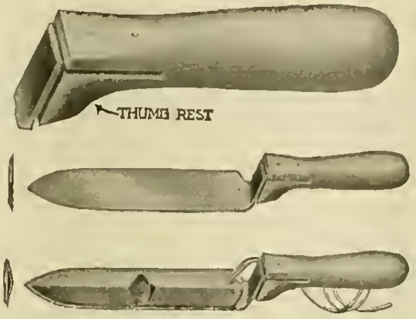
Three-band Italians. Untested for 50c each. The same as you pay $1.00 for, and just like the ones you get for $1.50. **Guaranteed** to be as good as money can buy. Every one fully **guaranteed** to give perfect satisfaction. Safe delivery. Write for prices on 25 and more.

N. FOREHAND
Ft. Deposit, Alabama

Fifty Years Among the Bees.—This is a standard book of something like 350 pages and over 100 illustrations. Its author, Dr. C. C. Miller, is a specialist beekeeper with an experience of over 50 years. He has read a majority of the literature on bees published in this country, and much of that published in Europe, and is everywhere considered as a high authority on the subject. It tells in detail how Dr. Miller keeps bees. Bound in cloth. Price, postpaid, $1.00, or with a year's subscription to the American Bee Journal, both for $1.75.

BINGHAM HONEY **Uncapping Knives**

With the New Improved Cold Handle



Standard length, 8½ in.; 75c.; ship. wt., 15 oz.
Extra long, 10-inch; each, 85c; ship. wt., 16 oz.
Steam-heated with 3 ft. tubing, $2.50; wt., 24 oz.

Our knives are made of the best razor steel, and we could produce them at least 10 cts. per knife cheaper by using inferior material. Mr. W. W. Culver, of Calexico, Calif., writes: "We have had difficulty in getting Bingham knives, such as we are accustomed to; that is, a light flexible knife that will give somewhat in moving over the comb. If you can furnish such a knife, send two standard and one steam knife. If the steam knife suits me I shall want about three." This is just the kind of knife we furnish, the kind Mr. Bingham furnished years ago, before others crowded him out with their inferior substitutes. We knew, because we have kept bees nearly 40 years. Old timers will again find what they want in our Bingham knife.

A. G. WOODMAN CO., Grand Rapids, Mich.

TIN HONEY CANS—LOW PRICES

5-lb. friction-top pail lots of 50, $3.25; 100, $5.35; 203, $10.35, 1015, $50.
10-lb. friction-top pail lots of 50, $4 30; 100, $7.60; 113, $8.35; 505, $40.
60 lb. cans, two in a case, 70c per case; over 10 cases, 69c; 25 cases, 68c; 50 cases, 67c; 100 cases, 65c per case. All f. o. b. Chicago, Ill. We are making prompt shipments.

A. G. WOODMAN CO. - - Grand Rapids, Michigan

BY ALL MEANS BUY A GOOD VEIL

Muth's Ideal Bee Veil, postpaid, 75c; with other goods, 70c.

OLD COMBS AND CAPPINGS

rendered into wax with our hydraulic wax press. Perfect work. We buy your wax at highest market price. Write us.

THE FRED W. MUTH COMPANY
204 Walnut Street, - Cincinnati, Ohio

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subsciption price postpaid.
Canada, $1.00 a year. United States, $1 25 a year. Foreign, $1 50 a year.
Sample copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

GOLDEN ITALIAN QUEENS

If you care to know what others think of this strain of Goldens,·read this letter from a satisfied customer —

FRANKLIN, TENN., July 8. 1916.

B. G DAVIS, SPRING HILL, TENN.,

Dear Sir:—I have one of your Golden queens whose colony has stored 250 pounds of honey this season, while the average of the yard was 90 pounds She is very prolific, and her bees are gentle and sure hustlers. Would like for you to take this queen and rear me 50 or 75 queens from her and mate with your drones, as I want to requeen with this strain. Yours truly, J. M. BUCHANAN.

PRICES OF QUEENS

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.60	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	11.00	18.00

Breeders, $5.00 to $25.00

BEN. G. DAVIS, Spring Hill, Tennessee

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL

325 Broadway - - Billings, Montana

QUEENS OF MOORE'S STRAIN OF ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, 1, $1 00; 6, $5 00; 12, $9 00
Select untested, 1, $1.25; 6, $6 00; 12, $11.00
Safe arrival and satisfaction guaranteed. Circular free.

I am now filling orders by return mail.

J. P. MOORE
Queen Breeder Rt. 1, Morgan, Ky.

EUROPEAN FOULBROOD

is spreading in various parts of the country. The first step in its cure is a vigorous strain of ITALIANS

The Root Strain of Bees have Shown Themselves to be Highly Resistant

While we do not claim their introduction will alone cure European Foulbrood, or that it will not make a start in their colonies, we have reports of where they have, with a little help, fought themselves nearly clean of European Foulbrood which was all around them in black and hybrid colonies.

These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

PRICES.—Our regular price is $1.50 in June and $1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for $1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

The A. I. ROOT COMPANY - - - Medina, Ohio

Embargo on Bee Supplies

In the East

BEEKEEPERS in the Eastern States, particularly in New England, should not delay ordering their stock of supplies as early as possible. The Eastern railroads are congested and have even placed an embargo on shipments to various points, refusing to accept freight until their roads are unburdened. Ordering your requirements a month earlier than usual will not cost any more and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

Our New England States representatives, Ross Brothers Co., 90-92 Front Street, Worcester, Mass., have a large supply of "**Falcon**" bee-supplies, and are especially equipped to handle the New England States beekeepers' orders whether they be large or small.

Those beekeepers living in the New England States can order direct from the factory at Falconer, N. Y., or can write for the name of the nearest dealer as they find it more convenient.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

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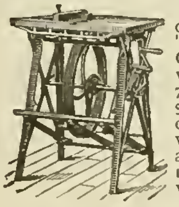

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AMERICAN
BEE JOURNAL

Vol. LVI.—No. 8 HAMILTON, ILL., AUGUST, 1916 MONTHLY, $1.00 A YEAR

MINNESOTA SNAP SHOTS

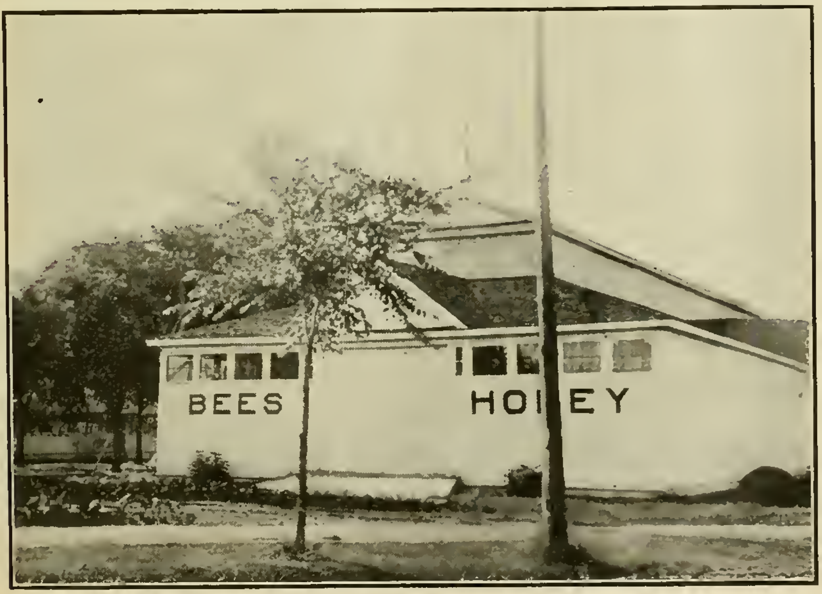
Items of Interest About Minnesota Beekeepers Gathered By Our Staff Correspondent During a Swing Around the State

THE Minnesota beemen are live wires. Those who keep in touch with the progress of the industry know already that the beekeepers of that State have been pushing things for some years past. They have a splendid building devoted especially to the exhibition of hive products at the State Fair and better premiums than any other fair offers. They have a separate department for bee-culture in their State University, and it is well supported. While several States include beekeeping in the courses at the agricultural colleges, as far as we know Minnesota is the only State which gives to the industry a separate department on the same basis as dairy and other agricultural activities.

Feeling that our readers would be interested in knowing something of the conditions in the State that leads the country in the amount of State support, and something of the men who have been responsible for bringing about this condition, our staff correspondent spent a few days in our sister State.

Several hundred miles of railroad and automobile journeys enabled him to visit a few representative apiaries. The average production per colony is high, but they have the same honey-plants that are common in all the northern States. White and alsike clover furnish the main dependence, with basswood and such fall flowers as heartsease, asters etc., in addition. If crops are good it seems due rather to good beekeeping than to especially favorable locations. There are thousands of acres of good clover pastures, and possibly the honey flows are a little more dependable than farther south. The writer could see very little difference in the conditions in Minnesota from Wisconsin and Michigan.

Mrs. Butterfield, a Successful Minnesota Beekeeper



BEE BUILDING AT THE MINNESOTA STATE FAIR

The beekeepers of the State work together harmoniously in their State organization, else they never could have accomplished what they have done. The writer, on his various trips in Minnesota, has never yet met a calamity howler, among the beekeepers. The association agitated the importance of a division of bee-culture at the University until the legislature was prevailed upon to give beekeeping the same attention given to pigs, cows and sheep. The work has grown until two men now give their entire time to it. Besides the usual class work, queen-breeding is carried on extensively for the purpose of improving the stock of bees in the State. Experimental work of various kinds, a survey of honey sources and of other conditions relative to beekeeping are in progress. L. V. France is in charge of the experimental work and the survey, and Prof. Francis Jager personally supervises the queen-rearing operations.

LIVE MINNESOTA BEEKEEPERS—PROF. JAGER, F. W. RAY, P. J. DOLL, DR. LEONARD, AND PROF. JAGER'S ASSISTANT AT THE JAGER HOME APIARY

On arrival at Minneapolis our representative was met at the station by J. P. Doll, Dr. L. D. Leonard and F. W. Ray, all former officers of the Minnesota association, who are now content to work just as loyally in the ranks. In Mr. Ray's automobile the journey was made to St. Bonifacius, to see the home apiary of Prof. Jager, where the State queen-rearing operations are carried on. It is a most delightful ride of about 25 miles along the shores of lake Minnetonka and through the native groves now largely settled by city people who go back and forth to their work in town. There are many basswood trees, and the clover was just beginning to yield well. The bees were humming merrily. On the way, we stopped at the Butterfield home at Long Lake. Mr. Butterfield is engaged in fruit growing and Mrs. Butterfield has taken up beekeeping which she finds very interesting. Surrounded by forest trees they have a sheltered position where fruit bloom starts the bees nicely in spring. Clover is abundant, and they also get some fall honey. Last year they harvested 14,000 pounds from 78 colonies. The women beekeepers are usually enthusiastic, and Mrs. Butterfield is no exception.

Father Jager is a very busy man. He still has supervision of his parish, although an assistant assumes the work. While most of his own time is occupied during the summer months with the rearing of the hundreds of queens for distribution to the beekeepers of the State, he still supervises his outapiaries, which are cared for by two assistants. Arriving at his home we were met with a cordial welcome and enjoyed every minute of our stay. The apiary is situated in a grove of seven acres with good shelter from north, east and west. Enough of the trees have been cut to permit the grass to grow freely, and still retain sufficient shade for practical purposes. The ground rises from the road, and a fine new work-house is nearing completion at the crest of the hill. There are two stories, beside a concrete basement for extracting, etc. The building is 24x66 feet and when completed will be one of the finest equipped honey-houses in the country. Mr. Jager prefers to carry on the queen-rearing at his own apiary, because the neighborhood is free from disease, and disease is present in the vicinity of the university.

There are about 350 nuclei scattered under the trees. The hives are placed far enough apart to prevent danger of queens entering the wrong hives. There are no other bees nearer than two miles, and these have been requeened with satisfactory stock Care has been taken to secure the best possible breeders. Every queen is given a chance to fill the combs in the nucleus which she occupies, with eggs before she is sent out. In this manner the bees in the little colonies used for mating are renewed, and the quality of the queen is tested to a limited extent. All queens are destroyed which do not come up to the high standard set by Prof. Jager. Unlike a commercial enterprise which must be made to pay, this establishment, supported by the State of Minnesota, is to furnish the beekeepers of that State with the best possible breeding stock, to improve their strain of honey producers. The queens are sold for 50 cents each, and the number is limited to three to any one person, who must be a resident of Minnesota.

They expect to send out 1,000 queens this season, thus providing more than 300 beekeepers with good stock with which to rear their own queens. While some are mated in baby nuclei most of the nuclei are composed of 2 Langstroth frames. Partitions in 8 frame hives provided 3 nuclei to each hive. An entrance at one end and at each side makes it possible to provide an opening to each of the compartments with little danger of mixing.

A short visit was made to the University farm to meet L. V. France, who as Prof. Jager's assistant is starting

L. V. FRANCE AND STATE INSPECTOR BLAKER AT THE UNIVERSITY APIARY—BEE BUILDING IN BACKGROUND

several interesting lines of research. The picture shows the apiary building with the long lines of beehives which constitute the college apiary. The bee department is provided with ample quarters for their work. Experiment for artificial mating of queens is being carried on extensively. While it is too soon to determine the possible value of this work the results will be watched with interest.

DR. LEONARD'S HOME.

The evening found us at the delightful country home of Dr. L. D. Leonard, who is well known to many of our readers because of his activities as secretary of the Minnesota Beekeeper's Association in years past. The doctor has an office in Minneapolis for his professional duties, returning to his home at the close of the day. A 20 mile trolley ride brings him to as pleasant surroundings as can be imagined. Although within two blocks of the car line, he lives as quietly as though he were a thousand miles from the city. His home is surrounded by native trees, and a little lake lies before his front door, where the water birds come to nest and the water lilies bloom in profusion. The Doctor is great for experiments, and his apiary has been the trial labratory of many implements now in use in his State. We plan to show some of his inventions at some future time. Just now he is experimenting with shallow extracting combs with the idea of preserving a set containing about 25 pounds of honey to be placed over each colony for winter stores. With a bee-space under these shallow combs, which provides easy access to different parts of the super for easy movement between the combs, he hopes for better wintering than on the full-depth combs alone. His limited trial has been very encouraging.

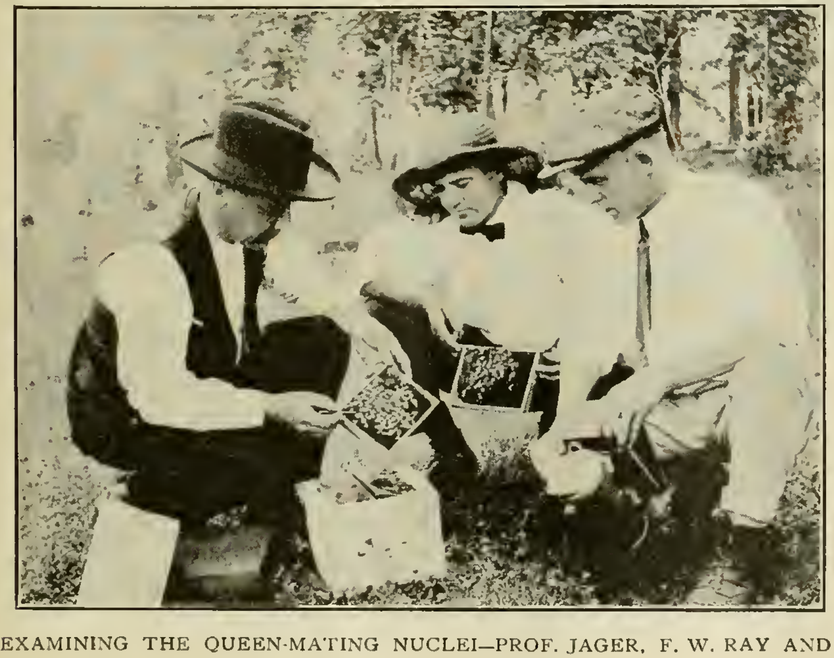
F. W. RAY.

Mr. Ray is a teacher of manual training in the Minneapolis schools and at the same time a very practical beekeeper. Ray looks for the dollars rather than the fun to be had from beekeeping. His apiary faces a small pond which would be called a lake in some localities. The bees were piling in the honey at the time of of our visit, and there was every prospect of a satisfactory harvest. Ray succeeded Dr. Leonard to the office of secretary of the State association, which office is now held by Prof. France. He placed his big touring car at our disposal and gave us a most interesting opportunity to see beekeeping about the twin cities. In passing through the city our attention was called to a small apiary beside the sidewalk and next to the police station. The bees are the property of the police captain, who also has an apiary on the roof. It is unusual to see bees in such a situation, yet we were informed that they had not annoyed the thousands of people who pass daily. As will be seen by the picture the bees are on ground that properly belongs to the street.

THE APIARY INSPECTOR.

In the evening a group of congenial spirits sat down to dinner together at the home of Chas. D. Blaker, the inspector of apiaries. In Minnesota the office sought the man, which is unusual nowadays. There were several candidates for the position, but the leaders in the association got together and decided that Blaker was the man they wanted. They went to the governor with the request that he be appointed. In Minnesota the inspector is on salary, so that he is free to give his attention to the interests of the beekeepers throughout the year. In most states the work is paid for by the day, and since a man must look after his own business it sometimes happens that such matters are not attended to as promptly as they might be if the inspector had no other duties. Mr. Blaker has a very good system of records, so that conditions in any locality can be followed up from year to year. He is now president of the association.

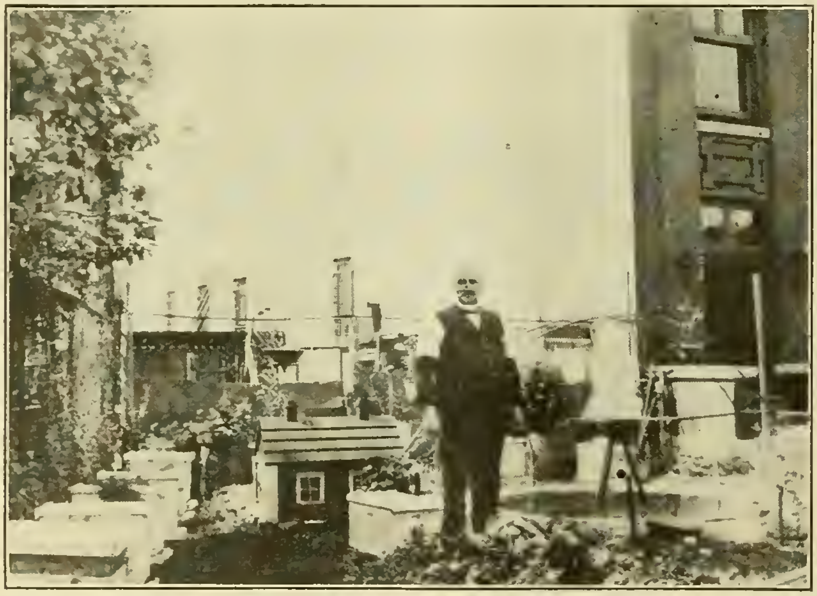
THE F. W. RAY APIARY IN MINNEAPOLIS


EXAMINING THE QUEEN-MATING NUCLEI—PROF. JAGER, F. W. RAY AND PROF. JAGER'S APIARY ASSISTANT

THE HOFMAN APIARIES.

The morning of the fourth of July our party went to Janesville to see the Hofman apiaries. Mr. E. L. Hofman is probably the largest honey producer in Minnesota. At present he has 850 old colonies and an increase of 90 making 940 colonies in all. Hofman belongs to that rare class combining neatness with good practice and extensive production. His hives are nicely painted, stands are level, grass is cut, all equipment is in place, and everything is slick as the parlor of a Dutch housewife. With seven yards, he has no time to permit the grass to grow under his feet during the honey flow. The surprising feature is that he finds time to care for his hundred acre farm and to do a good business with a clover huller in the fall. He did not say so, but the writer has a notion that he keeps the huller as much for the convenience of his neighbors who grow alsike clover for seed, as he does for the profit from the machine. With a large acreage of alsike grown for seed his chances of success are greatly increased.

We were much pleased to meet Matt Miklovitch, of Krain, Austria at the Hofman home. In his home country Mr. Miklovitch is connected with extensive apiaries operating 1,500 colonies on the migratory plan. He is spending the summer with Mr. Hofman in order to become familiar with American methods, and to learn whether some of our ways can be adopted with profit in his country.



POLICE CAPTAIN AND BEES BESIDE THE STATION IN HEART OF CITY

When beekeeping is carried on extensively it becomes necessary to eliminate the non-essentials. Hofman seems to be able to care for twice as many colonies as most men, without extra labor. Our picture shows the feeder which he uses. It is a large open pan which at one filling will hold the syrup made with 200 pounds of sugar. It would be an endless task to place syrup inside a thousand hives, but it is not a big task to fill one of these outdoor feeders in each of seven yards and let the bees help themselves. Of course the colonies that already have a sufficient supply will get as much as those which are short of stores, but it won't be lost. With one assistant, Mr. Hofman is caring for all these bees, and it would be physically impossible to care for so many and give each the detailed attention of ordinary methods. His combs are wired; full sheets of foundation are used so that there is little dronecomb in his hives, and good stock is apparent. The cover picture of our July number gave a good idea of the appearance of one of the outapiaries. A corner of the home-apiary and the bee-cellar are shown herewith.

At the time of our visit the honey flow was just beginning, and many of his colonies were three stories high, with the brood on jumbo frames. More and more of the extensive producers are being converted to the deep frame because of the ease with which swarming is controlled. There was prospect of an average of a hundred pounds to the colony, but you never can tell. We hope that Mr. Hofman will tell us later all about it.

With pressing work at home calling, and other journeys to be taken shortly, the time spent with our Minnesota friends was too short. When men place the business of honey production on so high a plane it makes one feel proud to be a beekeeper.

THE E. L. HOFMAN HOME APIARY AT JANESVILLE, MINN.

Disposing of the Honey Crop

BY G. C. GREINER.

We may not all pursue the same method of disposing of our honey crop, but we must all agree that the sale of our season's products at paying prices is the most essential part of our profession. If we have to sell below cost, beekeeping will be uphill business and lose its most inspiring feature as far as gaining a livelihood is concerned.

In all my past beekeeping life I have found only one beekeeper who kept a limited number of colonies exclusively for his own amusement and enjoyment. The family undoubtedly used all the honey they wanted on their own table, but to sell the overplus did not seem to be any temptation to them.

At my former home, many of my farming neighbors kept from one to ten or more colonies of bees, of course, all in the various forms of the old fashioned box-hive patterns for the purpose of supplying their own table with the coveted sweet. Whatever they had to spare they sold as best they could regardless of cost; they considered the income from this source a clear gain.

It is very different with the professional beekeeper. He expects to make his living by his bees, and if he fails to dispose of his crop above the actual cost, his season's work will prove a financial failure.

Among the different methods adopted by their advocates may be mentioned cooperation, selling on commission, selling right out at wholesale, selling from house to house direct to the consumer, etc. All these have their advantages and disadvantages, and it depends very much on the conditions and environment of the individual, which is best. Years ago, before I moved to my present location, circumstances compelled me to depend wholly on city commission houses for my honey sales. Our experience at that time had not yet taught us that it was safer and cheaper to ship comb honey by freight (in carriers) than by express. The commission fee, 10 percent, in addition to the exorbitant express charges, which I had to pay, reduced the net returns to such low figures that a profit above actual cost was out of the question. But what else could I do? The surrounding country was too sparsely settled to make selling from house to house a profitable undertaking, and no city market being within easy reach, I had to submit to these unfavorable conditions. The very best of my basswood honey, which was in no way inferior to the fancy white clover I produce in my present location, seldom netted me over 12 cents, and frequently less.

I had reason to believe that that same honey sold at that time to the consumer at from 22 to 24 cents, when I had to be satisfied with about one-half of those figures. I wondered many times why we producers could not cut out some of these intermediate expenses, and at the same time stimulate the use of honey by furnishing our goods direct to the consumer at a less price. I could account for some of these outgoes. The express company charged $1.25 per hundred and the commission firms 10 percent for their service, covering together about 3 cents per pound. But what about the remaining 8 or 9 cents? Did they go into the retailer's till as his profit? If so, he received too big a share.

Since I have moved to my present home, some 14 or 15 years ago, I have changed the foregoing program materially. Present conditions enable me to deal direct with consumers and retailers, and by doing so save all my former commission and express expenses. Of course, I have to spend my time on the road; but during the latter part of the honey season, when the hurrying work of the bee-yard is out of the way and when the early honey is ready for the market, a couple of days each week on the road pay me ample traveling fees.

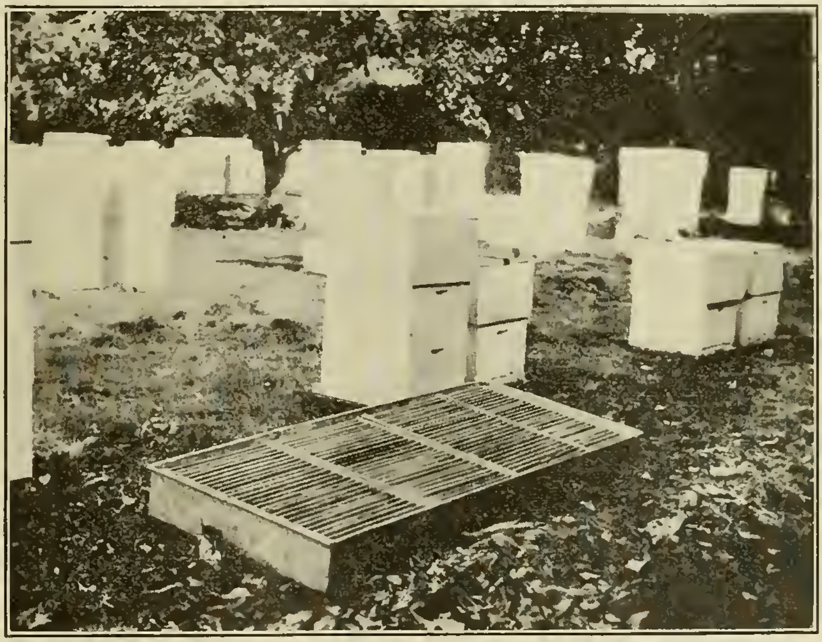
At first I started to sell from house to house. Although I did quite well under the circumstances, it did not not agree with my nature. Being naturally bashful and adverse to making friends with strangers, it is the hardest work I can do to enter a house and introduce myself and my business where I am not already known. This natural inclination, or rather disinclination opened up a new outlet for my product. I am within easy reach of two city markets, one four and the other six miles from my home, and to escape the embarrassing feature of calling at private homes, I made a trial trip to one of them. The result was surprisingly satisfactory. There I could sell more honey in two hours than I could sell in two or three days on the road. This discovery induced me to change my former tactics of selling from house to house to making regular weekly visits to these two markets, where, by close attention and fair deal I have established a home market that furnishes a ready outlet for all the honey I can raise.

If my crops should be counted by the 25 and 50 tons, I would probably have to look for another market. But I am a small beekeeper. The few tons I produce at present I can easily dispose of at fairly good prices at these home markets. My advanced age compels me, as Dr. Miller says, to long for less work. My ambition does not run so much for the greatest number of colonies I can keep as for the greatest average amount of surplus honey I can take from my bees. If with better methods and less labor I can take the same amount of honey from one-half of the bees it formerly took under common management, I am the gainer in more than one respect, and in this I have been successful beyond my most sanguine expectations.

La Salle, N. Y.

Selling the Honey.—A good crop, in some places a record-breaking crop, has been harvested in the central and northern States.

When you establish your prices for honey, bear in mind that sugar is high in price this season and that honey should sell and usually sells at better prices than sugar. On the other hand it is a mistake to ask exorbitant prices. Honey cannot be a staple unless the families of limited means can afford to buy it.



HOFMAN'S OUTDOOR FEEDER AT THE HOME APIARY

G. C. GREINER IN HIS WELL KEPT APIARY

Avoid shipping your crop to the large centers, from whence it will be shipped back to your local retailers and country stores. Work your locality thoroughly, exhibiting samples to prospective customers, or hire some competent salesman to do it for you. It will pay better than shipping your honey away for an unknown price.

There is nothing so attractive as honey, in the entire line of country produce, and consumers are easily secured if the honey is properly put up and well presented. The United States, with a little effort on the part of the honey producer, can consume readily twice as much honey as has ever been put upon its markets.

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THE EDITOR'S VIEWPOINT

Breeding for Better Stock

In our effort to breed for better stock we are handicapped by the fact that we cannot control the mating of the queen, and the average beekeeper pays no attention to the matter of drones. Yet this is a real mistake. Although we are utterly helpless as to the absolute control of the mating of any queen, we can do no little to control the probabilities in the case. We can suppress almost entirely the rearing of poor drones, and have none but good drones reared in the apiary.

To be sure, the drones from neighboring apiaries are to be reckoned with. A virgin may meet a drone from a colony three miles or more away. Yet while such a thing is possible, some maintain that a virgin rarely goes more than a quarter or half mile from home on her wedding trip. If that be so—and it would be a difficult thing to prove whether it be true or not—and the drone goes no farther from home than the virgin, then we are safe if there be no other bees within a mile. In most cases an up-to-date beekeeper who makes much of a business of beekeeping is not located within a mile of any other apiary of considerable size. So his drones are in the majority, making the chances for home mating greater to the extent of that majority.

Clearly, then, it is a matter of importance, and of great importance, that we encourage none but the best drones. How shall we do that? "Oh, that's easy," you say. "Select half a dozen or so of the best colonies, rear virgins from one of them, and rear drones from the others. That's all there is to it." Is it? Suppose we consider the matter a little.

A certain colony in the apiary, in an average season, yields a surplus of 100 pounds, and we call the queen of that colony a 100-pound queen. Of course, it is the workers that do the storing, and a worker of that colony depends for her character, not only upon her mother, but also upon the drone with which her mother mated. In other words, that worker is the daughter of her mother and also of her father, her father being the drone with which her mother mated. While it is true that the worker is the daughter of her mother and of the drone with which her mother mated, it is not true that the drone is the son of his mother and of the drone with which his mother mated. As the drone proceeds from an unimpregnated egg, he is not at all influenced by the drone with which his mother mated. He is the son of his mother alone; or if you insist that he must have a father, then he is the son of his grandfather, the drone with which his grandmother mated. He is of the same blood as his mother was without any reference to her mating; that is, his blood is the product of the combined blood of his grandmother and the drone with which she mated.

As his grandmother gets her rating from that combined blood, whether she be a 50-pound queen, a 100-pound queen, or whatever she may be, the drone will have precisely the same rating as his grandmother on his mother's side. If his grandmother is a 50-pound queen, he is a 50-pound drone. His mother may be a 25-pound queen, a 75-pound, or something else. That doesn't make any difference; he is a 50-pound drone, because his grandmother was a 50-pound queen.

Now let us see how it will work out to have half a dozen of the best queens, using one for rearing virgins and the others for drones. Suppose they are all 150-pound queens. Any one of them is all right for rearing queens, but how about drones? One of them may be the product of a 200-pound queen and a 100-pound drone, and her drones will be all right. Another may be the product of a 100-pound queen and a 200-pound drone, and drones will not answer. Just remember that in considering the value of a drone, we are not to consider his mother, but his grandmother.

With this view of the case we have the comfort of knowing that the problem of securing the best drones is made immensely simpler and easier. For if all our queens are reared from our best stock, the matter of drones takes care of itself automatically. No matter if a queen has mated with the poorest scrub stock of a neighbor, her drones are just as good as any, for they come from the same grandmother.

So rear queens persistently from best stock, and suffer no drone that has not a respectable grandmother.

C. C. M.

When we first kept Italian bees, in the sixties, we found hybrids from our Italian drones three miles away, but it was through a fairly level country. In Switzerland they hold that bees a mile and a quarter away are safe from impure dones.

Probably none of us had looked into this matter of the drones' forbears as Dr. Miller has done in the foregoing. Breeding for better stock is especially indispensable with the men who make it a business to sell queens. We call their attention to both this article and the one on queen selection.

To avoid rearing drones in undesirable colonies, it is not only necessary to cut out the drone-comb, before the queen breeds in it, but it is indispensable to replace it with worker-comb, as the bees would almost invariably build drone-comb again in the same spot. Some drones will be reared anyhow. But we can avoid the promiscuous production of thousands of drones in all but the colonies of our selection. In those we will encourage it. As to our neighbors' bees, if we cannot prevail upon them to do likewise, we can at least be certain that through our efforts their own bees will finally improve. We can also rear drones and queens at seasons when their bees have no drones, either early or late. Success always attends the persistent worker.

C. P. D.

The Prospect

During the past few weeks our staff correspondent has traveled about 5000 miles over eleven States, from Niagara Falls, New York to Aberdeen, S. Dak. In all this region there is an unusual crop of white and alsike clover, and prospects for a crop of clover honey were very good indeed. By the time this is printed the early flow will be over and much of the honey extracted. While we anticipate a good crop we can see no reason why a fair price should not be realized. Those who get nervous when a big crop is in sight and sell at the first opportunity are quite likely to sell below the best market price. When a good price is offered one will do well to close out early, but it is a mistake to sacrifice anything in order to insure an early sale simply because the prospect indicates a large crop.

The area where honey production is profitable is constantly being extended. In South Dakota and Nebraska the clover growing districts are gradually being extended westward. White clover and sweet clover are now common in many localities where they were not to be seen a few years ago. There are still many sections where mustard, which grows abundantly in the wheat fields, is about the only source of nectar during the clover season, but yellow sweet clover is being scattered along the railroads and highways, and white clover is beginning to appear in similar places.

One man who was visited shipped a colony of bees from Wisconsin several years ago. They have received but little attention and have increased by natural swarming until the neighboring farmers are now supplied with a few colonies, and the original apiary has increased to 40 colonies. They have done so well for their owner that he plans to make substantial increase and to give them much more attention. As Dakota grows older and the wheat fields give way to pastures and diversified crops a large area of honey-producing territory will be added. However, there is little danger of overstocking except in limited localities in any State as yet. Not 5 percent of the available territory seems to be occupied in any State east of the irrigated regions. With so much unoccupied territory to be found by going a short distance there is little excuse for crowding into territory already fully stocked.

Average Crop of Honey

One of the questions a beginner is pretty sure to ask is, "How much honey per colony should I expect?" The question is a troublesome one, and it is not at all certain any one has the right answer. If we take the reports given in a bee journal during any given year, and strike an average, that average is sure to be much higher than the average of all the beekeepers of the country. This for more than one reason. In the first place, those who take bee journals and report in them are likely to be better beekeepers than those who do not. In the second place, we do not have in the bee journals reports from all the subscribers. Beekeepers, like other folk, like to tell of their successes, but not of their failures. So the reports in the bee journals tell us of the possibilities rather than what is done in general, and we cannot get from them very much of an idea as to the general average.

Last year, under date of Aug. 5, Morley Pettit, the efficient Canadian leader, sent out a "Final White Honey Crop Report," which gave the average number of pounds of honey 55.1 per colony. The addition of the fall flow would, of course, increase that. But that report included only 19,107 colonies, and it is estimated that there are 300,000 colonies in the province of Ontario. That was only one out of 15, and no doubt the other 14, if reported would bring down the average greatly. In any case the report for a single year gives nothing decisive.

In his book, "Beekeeping," Dr. E. F. Phillips says: "In apiaries managed for comb-honey production, it is perhaps fair to estimate the average annual crop at 25 to 30 sections. For extracted honey, larger averages may be expected, perhaps of 40 to 60 pounds." If that errs either way, it is quite possible it may be on the side of being too high. At any rate, there are men who have made a success in beekeeping whose average in their earlier years of inexperience did not show up so well.

So the man who gets per colony 25 to 30 sections, or 40 to 60 pounds of extracted honey need not be discouraged. But he should never be satisfied to be only average. C. C. M.

A Special Equipment Number

Some of our readers have suggested that we should issue a special number of the American Bee Journal devoted to the description of equipment. We are considering the matter and if there is sufficient interest will do something of the kind in November or December. If our readers who have worked out some new plan of operations will describe the method fully, and if possible send us pictures to illustrate it we will be glad to have it and will make use of as many such articles as space and importance will justify.

Nearly every practical beekeeper has something which he has developed in connection with his work which may be of interest to many others. Equipment which saves time and lightens labor is always worthy of being given to the public.

Another Step in Cooperation—Texas Honey Producers Organize

More than 70 beekeepers from every district in Texas, representing more than 15,935 colonies of bees, met recently in San Antonio, and organized the Texas Honey-Producers' Association. They will incorporate with a capital stock of $25,000, of which more than $5000 was subscribed from the floor of the convention. The shares are in demominations of $10, and each member is limited to 100 shares. To make the organization most effective, the organizers went on record as favoring the holding of small allotments of ten shares each.

The purposes of the organization as expressed during the convention are primarily for cooperative selling, advertising, and for the standardization of the Texas output of honey, both in quality and packing. The organization is modeled after the plan of the "Colorado Honey Producers' Association," the strong and successful cooperative organization whose headquarters is Denver.

A system of grading and labeling will be established with inspectors at the various points of collection and re-distribution. A distinctive trademark or label will be adopted, and every crate of honey put out by members of the association will be thus labeled. Directors for the new association were elected as follows: W. A. Winters, Jourdanton; Louis H. Scholl, New Braunfels; Richard Voges, Poth; W. C. Collier, Goliad; W. J. Stahmann, El Paso; Henry Brenner, Seguin; and E. G. LeStourgeon, of San Antonio.

Officers elected are: President, Louis H. Scholl; vice-president, W. J. Stahmann; secretary, E. G. LeStourgeon. Some of the principal beekeepers of the State were present, among them being Mr. Scholl, who has 1600 colonies; W. C. Collier, 1300; J. C. Cox, 450; R. J. Ormand, 530; Tom Campbell, 500; Louis Biediger, 550; W. J. Stahmann, 1200; W. A. Winters, 1000; W. A. Grant, 475; E. G. LeStourgeon, 860.

With as able officers and directors as has this association, it should gather all the influential beekeepers of Texas under its standard for their own good, and be a success from the beginning.

Further information may be obtained by addressing the new secretary, Mr. E. G. LeStourgeon, of San Antonio.

American Bee Journal

No. 3.—A Trip Through Texas

BY THE EDITOR.

OUR third trip, on March 13, took us to the Medina County Beekeepers' meeting, at Hondo, a distance of 50 miles west of San Antonio, and this was made in an automobile, in company with the State Entomologist, Mr. Paddock, and our inseparable friend, LeStourgeon. Mr. Paddock had arrived the same morning from College Station.

I do not know what impression my account of Texas has so far produced upon the reader. It may be unfavorable, as far as the description of the country is concerned. But I want him to know that, as a bee and honey country, those brushy plains and low hills can hardly be equaled, except by highly cultivated localities such as the alfalfa or the white clover regions. I compare the chaparral, as it is called, to the heather plains of Gascony, described by me in November, 1913, the "Landes," fit only for pitch pines, cork oaks and bees. The chaparral, however, is fit only for bees and cattle. They say that it takes 10 to 30 acres of it to support one steer. But the possibilities of honey are endless, and that is why the beekeepers are all large producers. As stated by Prof. C. E. Bartholomew, of Iowa, in the last Iowa report, "Texas has more successful up-to-date beekeepers than Iowa and less persons who keep bees."

Owing to a slight tire trouble, we had to stop for a half hour in one of the wildest spots along the way, and wife and I took occasion of this delay to take a walk and lose ourselves a little while, in the brush. There was for us an enchantment and more or less romance, in this little walk, in such silent solitude. Men are driven to poetical effusion, by life in such a country, and we take the liberty to break our rule and quote one stanza from a poem by one of our southern beekeepers:

> "And men live there; a hardy race,
> Like none born on the earth;
> With fearless eye, a sun-tanned face,
> And hearts of truest worth,
> Proud of their Texas birth."
> —G. E. L.

They say that, in some districts, there is plenty of game yet, and a photograph received from friend Laws, some years ago, is good evidence of it.

We arrived in Hondo, a little before noon. It is the county seat, and has a very pretty courthouse. We entered the hotel and asked for a room, as we expected to remain over night. The landlord was playing dominoes. He pointed to the desk and said: "There is the register. You'll find a room at the top of the stairs." And he continued playing. We found the room, washed our faces and refreshed ourselves. Then we had lunch.

After lunch came the meeting at the courthouse. Prof. Paddock delivered a speech, upon several bee subjects, but mainly upon bee inspection and the treatment of foulbrood.

Prof. Paddock is State Inspector of Apiaries as well as State Entomologist., He does but little inspecting himself but has under him some 25 county inspectors in as many counties. The Texas method is to appoint inspectors in such counties as have a local association and select for this purpose men indicated or recommended by the local association. This method has excellent results, because the inspectors are well known. In this way a good feeling exists between the State Inspector and the local beekeepers who are always ready to lend a hand, as I could see by the favorable comments of the members present. The central office of the inspector serves as a tabulating and recording station, from which directions are given to the various inspectors, as from the headquarters of an army.

Personally, I spoke to the beekeepers as I did at all places visited, upon the advisability of local cooperation, which must precede State or National organization in order to make the latter successful.

Among the discussions, I heard the statement made, I believe by the president of the Medina Association, Mr. A. E. Saathoff, Jr., of D'Hanis, that the moths are not only kept out of combs, but killed, by the evaporation of moth-balls if the combs are kept in a well-closed box with this drug. Dr. Bonney made a suggestion of this kind in the Bee Journal some time ago, but we did not know that it had been tried successfully. Recommendation is made to close the hive or box hermetically by using a sheet of paper under the cover. After a day or two of airing, when the combs are wanted, they lose the moth-ball odor. This is worth knowing.

Here, again, to the question of distance usually traveled by bees, the re-

W. M. FAUST, OF FLORESVILLE, TEX., ADDRESSING THE BEXAR COUNTY FIELD MEET plies were almost uniformly "less than two miles." Mr. Louis Biediger, of LaCoste, keeping some 550 colonies in Medina county, has apiaries three miles apart in which the quantity and quality of the honey differ, showing that their range is different. However, Inspector H. L. Mofield, of Hondo, once had his bees get honey fed outdoor to bees by W. O. Victor, four miles away. No doubt they can, and do go farther than two miles, in occasions.

As an instance of the dryness and mildness of the climate, Mr. Biediger told of having had a strong colony lose its cover, and remain with all the frames uncovered from November till March, and still prove a first-class colony. They had done all they could to close up the top with brace-combs and propolis. By the way, propolis is not so plentiful in those countries as it is in Illinois.

THE FRUIT OF THE CHASE—W. H. LAWS, BEEVILLE, TEX.

At the Hondo meeting, a number of ladies were present, three of them of the Saathoff family, who own a ranch 15 miles from Hondo. We were given an invitation to go and spend the night at the ranch and see cattle feeding on cactus the next morning. This was quite enticing to "tenderfoots" like us, and there was no hardship since they had a good automobile to bring us, and good roads. We accepted, of course. We had an opportunity to see an interesting side of Texas, in this way.

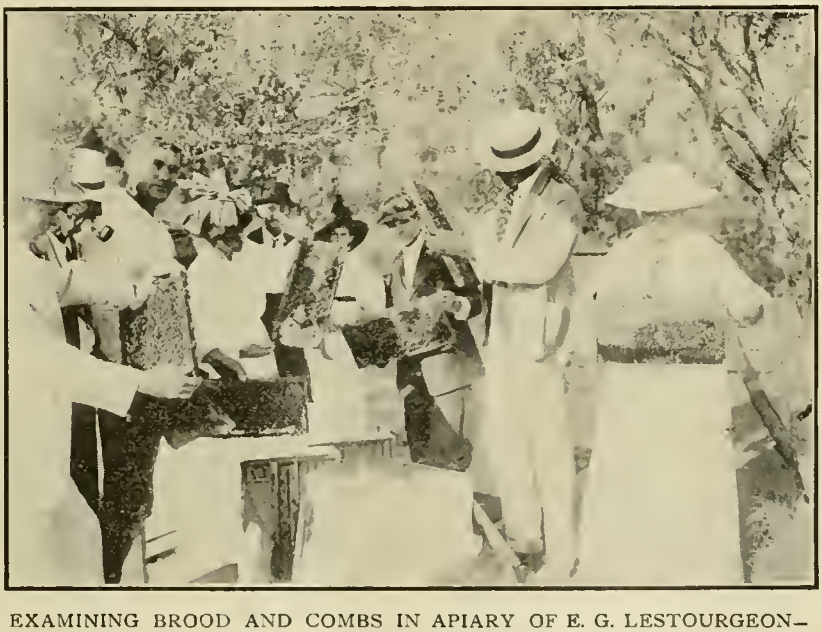
The Saathoff people own 5500 acres, have three or four ranches two or three miles apart on this pasture. The father lives with his wife and one daughter, Miss Lena, at one of the ranches, his sons at the others. Miss Lena is a *lady*, a real Texan, a splendid auto driver, and used to the circuitous roads of the chaparral. We spent the night at the ranch, and the next morning were taken, in the auto, to the cattle-feeding.

As most of our readers are probably "tenderfoots" like ourselves, it is necessary to explain that feeding cattle on cactus is a daily job in drouth times. They don't harvest the cactus. The only thing necessary to "feed" is to burn off the cactus needles. To do this, a special gasoline torch is used, which throws a broad flame over the bush. In the twinkle of an eye, a cactus bush four feet high and several feet in width, with leaves much larger, thicker, and broader than a man's hand, is stripped of its needles. The cattle, accustomed to the performance, come running and bellowing, as soon as they hear the roar of the torch. In a couple of hours two men feed over 100 head. The thornless cactus of the great Burbank was produced to obviate this labor. But it would have to be planted, cared for and protected against the cattle who would soon destroy it, since it is without defensive thorns. With this method, until cactus ranches can be established, of the thornless kind, the cattle get only as much as the owner cares to give. The supply is limitless.

The same day at noon, Miss Saathoff kindly brought us to the D'Hanis station and we continued our trip to Uvalde this time, meeting, on the train, our friend Paddock. Uvalde, which we reached at 2:00 p.m., is by many people called the best honey-producing spot of Texas. In October, 1901, the editor of Gleanings, E. R. Root, described it as the beekeeper's paradise, and paid a visit to the very man who awaited us at the station this time, Mr. W. D. Bunting. Mr. Bunting was then a bachelor. He is now a married man with a charming wife and a nice little son. Mr. Bunting was then one of the largest honey producers in the country. He has had as many as 1200 colonies and still runs about 550. He is secretary of the local association.

The beekeepers we met at this spot are all large producers. There were some 15 or 20 at the meeting, and I do not believe a single one of them owns less than 500 colonies of bees. They looked like practical men, every one of them. The county of Uvalde, in the Texas statistics published in 1913, is shown to have over 10,000 colonies of bees in movable-frame hives, and probably the tabulation is incomplete.

But the weather was too dry. The bees were invariably reported suffering, dwindling, probably for want of pollen. Usually there is plenty of pollen-furnishing flora, early in winter. This year there was none. The mesquite, however, was almost ready to bloom, and no doubt in a few days the bees must have boomed. Moisture came at



EXAMINING BROOD AND COMBS IN APIARY OF E. G. LESTOURGEON—BEXAR COUNTY FIELD MEET, TEX.—MESQUITE FLORA the end of the month.

We stayed that night at Mr. Bunting's. Mr. and Mrs. Victor came and spent the evening with us. W. O. Victor will be remembered by members of the National Association as the president of the Texas association when the National met in San Antonio, in 1906. He is one of the representative beekeepers of the South.

Both Bunting and Victor agree on the advisability of using cotton-seed meal as a substitute for pollen, in times of scarcity of bloom. I believe the beekeepers of Texas will do well to keep this in mind. Probably a great many already do it.

Paralysis, or May disease, or constipation (take your choice), causing dwindling, appears to be, after foulbrood, the most dreaded trouble for bees in warm countries, as well as in damp ones like England, where it is known as Isle-of-Wight disease. Mr. Victor suggests decayed or bad pollen as one of the main causes. Honey-dew from live oaks, honey from dodder and arnica blossoms souring in the hive are all suggested as initial or determining causes for this puzzling epidemic. No particular kind of honey may be blamed, since the trouble appears in countries with entirely different flora. It is the condition of the honey, rather than its kind, that causes the disease, and souring pollen may have a great influence also. The statement is almost unanimous everywhere that it is in damp confining weather that the disease begins.

The next day, we took the train for our headquarters at San Antonio. Mr. LeStourgeon had gone back there from Hondo, after the Hondo meeting, and Prof. Paddock had returned ahead of us to the college.

Our next visit has to do with our old friend Louis Scholl and the Texas college.

[To be continued]

Short Catchy Articles About Bees

BY A. F. BONNEY.

I HAVE tried with many styles of articles to get free advertising for honey, but, as a rule, the editor detects my duplicity. However, here is one that stuck:

If a fat steer sold for what a good queen bee does, what would he bring? One dollar and fifty cents is a fair price for a pedigreed bee, and her ladyship will weigh about 20 grains. This is $36 an ounce, or $576 the pound. Now, a steer of good family should weigh at least 1200 pounds, which multiplied by $576 brings the tidy sum of $691,200.

Almost any editor will publish and readers see the statement that:

Careful study and observation have shown that a bee must visit a matter of 60,000 flowers to secure one pound of honey. When it is considered that a colony of bees will consume something like 200 pounds of honey each year in housekeeping, besides yielding a surplus of 50 to 300 pounds, it will be seen that they rival the ant in industry.

The average person is woefully ignorant of the life and habits of the honeybee, and I have ready to send out the following:

The honeybee is curious in more ways than one. If a queenbee fails to mate, she still lays eggs which will hatch, but only male eggs. During the busy season a worker-bee lives but about 40 days, but if hatched in the late fall it lives until the following spring. The drones live during the summer, but when the honey flow ceases in the fall they are expelled from the hive and left to die.

This summer I shall print an offer similar to the following:

To the school child in Washington township who sends me the best letter of 200 words on the subject, "Why I Like Honey," I will give a 10-pound pail of Bonney honey free of all cost. The letter must be in by July 15.

This offer will be sent out on postal cards and in local papers. Of course, any subject can be used, and to save printer bill one can simply send a notice to each school in their township for the teacher to post.

Buck Grove, Iowa.

Getting Better Filled Sections

BY THOS. D. BUDD.

DR. HUMPER, in Gleanings, 1913, told us how he had tried to induce the bees to build perfect sections with only partial success. The remarks of the Editor, reviewing the article, stated that breakage in shipping imperfect combs or sections, where the comb was not securely fastened to section, discouraged many beekeepers from producing comb honey and turned their attention to the production of extracted honey. At the time I thought what a pity it would be to be deprived of the beautiful sections of comb honey and see this delicious food product disappear entirely from the market. I always pay special attention to the appended remarks of the Editor in reviewing an article.

When I started to keep bees, my spare time was very limited, so I decided not to follow the slogan, "Keep more bees," but keep only a few, and see that *they* were well cared for as far as my spare moments would permit.

I did not intend to keep bees for profit, further than my personal needs, and as I only had one colony to start with, I did not invest much in tools and appliances.

My first trouble came when I tried to fasten the foundation in sections. I made a device similar to the Parker fastener, but the foundation would not adhere well to the cold section. It would often fall away after the sections were placed over the bees, and the result was very imperfect work on the part of the bees, but my fault. Some time afterward, when cleaning out some sections from which the comb had been removed, I noticed that on the three sides of the section where no wax had been applied, it was an easy matter, but on the side where the wax had been it was far more difficult to scrape the adhering comb from the section. This gave me an idea.

I decided to make a trial to *induce* the bees to anchor the comb and foundation more securely to all four sides of the section. (Think "induce" is the proper word according to the old saying about leading the horse to water). I decided to do mechanically what the bees naturally have to do before the comb is fastened to the sides of the section or any place that they start to build comb.

In watching the bees work in sections, I have noted that wherever they want the comb to adhere they apply wax enough to penetrate well into the fiber of the wood. Basswood is a very porous wood, and the fiber is soft and very absorbing, hence quite a quantity of secretion must be used by the bees in order to get the comb to adhere firmly to the section, and if the outer cells, or those next to the wood, are filled with honey, new wax is used to coat the entire surface, to prevent the honey being absorbed by the wood of the section.

APIARY OF F. K. WINKLER, OF STONEHAM, TEX., WHO INCREASED FROM TWO BOX-HIVES TO 160 COLONIES IN GOOD HIVES

How much surface do the bees have to cover or secrete wax on when they build the section full of comb and fill the outer cells and leave no rounded edges? As an example take a 4¼x4¼-1⅞ inch section; the average thickness of comb in this style of section will be about 1⅜ inches; figure four sides 4x1⅜ inches and we have 22 square inches of surface to each section. Multiply this by the number of sections in super and you will find that the bees have *some* reason to hesitate before starting on this task, and no wonder if some of the work is left undone and not perfect. Of course, if some of the sections are supplied with full sheets of foundation, this gives the bees about 30 square inches of surface to build comb on in each section, and is a great help. The more the bees are aided with their work the more honey they produce, and the beekeeper will be well paid for any extra expense incurred.

My device for coating the inside of sections with wax leaves only a very thin coating on the wood of the section about the width that bees build the comb.

Nothing but pure clean wax is used, not clarified in any way. The wax is applied hot, at about the temperature of boiling water, and penetrates well into the wood and leaves surface non-absorbant, just as the bees prepare the wood of sections before building the comb thereon. This is an incentive to get the bees to anchor the comb firmly to all four sides of the section, reduces the number of "pop holes," renders the surface non-absorbent and induces the bees to fill more of the outer cells, leaves an ideal surface to attach foundation with any style of machine, and the bees build more perfect combs with less rounded edges. Bees accept more readily sections prepared in this manner, the honey grades up better, and the loss from breakage in shipping is reduced to the minimum. Have tried my plan out for two seasons and am well satisfied with results obtained.

La Crosse, Wis.

[Producers of section honey will be interested in Mr. Budd's scheme for painting with wax the inside of section boxes. Just how much of practical value there is in the plan, it is not easy to say. It certainly looks as if a surface of wax upon which to fasten the comb would suit the bees better than one of wood more or less porous. Those who have trouble in getting the bees to fasten the comb to the sides and bottom may find it a paying operation, and even those who do not have such trouble may possibly find the work done a little faster with the waxed surfaces. Of course something depends on the time it takes to apply the wax, and Mr. Budd does not tell us about this, nor how he does it. A fair test of the plan would be had by having a super filled with waxed and unwaxed sections alternating.—C. C. M.]

No. 19.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(Photographs by the author.)

THE catalpa tree produces a great profusion of bloom. The blossoms are so large that a bee can readily crawl right in the heart of the flower. However, I do not remember ever having seen a bee on the blossoms of one of the trees on our lawn. From my own observation I could never list the catalpa as a honey-producing tree. It blossoms with us just at the height of the white clover flow when the bees have little inclination to seek other pastures.

The testimony of those who should be competent observers gives an unqualified endorsement of the catalpa as a nectar producer, although I find slight mention of it in our literature. The fact that large areas of these trees are being planted for timber in many places make it of special interest to the beekeeper. The catalpa or Indian bean, *Catalpa speciosa*, is a native of the woodlands of southern Indiana and Tennessee, west to Arkansas. This form, known as the hardy catalpa, is also widely planted in Iowa, Illinois, Kansas, Nebraska and other States. There is another similar species closely resembling it which occurs further south, and is common in the Gulf States.

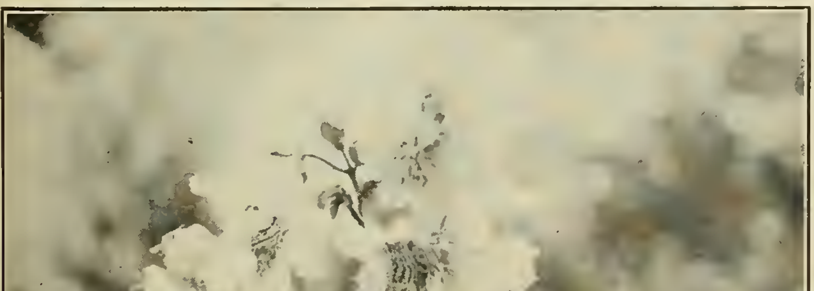


FIG. 85.—CATALPA BLOSSOMS

The leaves are heart-shaped and the blossoms are large, nearly white, and grow in large clusters as shown in Fig. 85. The tree grows very rapidly, furnishing desirable timber for fence posts, telephone poles, railroad ties, etc. In Kansas large areas have been planted by the railroad companies for the purpose of growing ties. Beekeepers situated near such plantings should find the trees of material value.

Atlantic, Iowa.

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Vocational Opportunities in Beekeeping

From the Standpoint of Apicultural Instructions

BY BURTON N. GATES.

SOME ONE has said that "beekeeping is the oldest art under the sun." True, but business beekeeping is young. It is, moreover, becoming much diversified yet sub-divided into narrow specialities, as has the fruit industry, within recent years. There is the honey producer; the one producing extracted honey likely does not produce comb honey and *vice versa*. There is the bee-rearer or producer, whose sole aim throughout the season may be to ' make" more bees, the surplus stock which he may sell by the colony, nucleus, pint or pound. Then there is the professional queen-rearer, whose business it is to rear and mate queen-bees for market. Annually thousands and thousands of these are distributed by mail throughout the country and abroad. In some localities there is a tendency toward specialization in wax production from a commercial standpoint, by no means a negligible product. Finally there are the specialists who have become expert in handling the products of beekeepers; in some of these establishments many tons of honey are daily graded, bottled and shipped to market. Massachusetts has her increasing share in all of these.

There is another opportunity for the specially trained. With the growing recognition of the young industry comes the demand from all parts of the country, and even abroad, for those who can teach and investigate or organize and develop the industry of a given locality. In many States beekeepers are requiring of their entomologists or beekeeping specialists, field service in the suppression of brood diseases of bees. One who is merely a beekeeper, without college and specia training, can scarcely be expected to meet all the requirements. Massachusetts is a pioneer in the field, for men and assistance.

This outline is already extensive, representing an apicultural income to the country of millions of dollars, the figures of which have never been determined. But beekeeping has an even greater, more important, fundamental and stupendous agricultural aspect than any yet enumerated. It is that inestimable service of the honeybee in seed, vegetable and fruit production, the value of which may never be computed.

This horticultural relationship of beekeeping is of deepest significance wherever peaches, plums, cherries, pears, apples, various berries, certain seeds as the clover seeds and cucurbitaceous vegetables (like the squash, cucumber and melon) are grown.

It may be conjectured that by a fiat or decree, all manner of bees in a locality could be temporarily annihilated. Suppose this occurred when fruit trees are in blossom. What would be the results? Orchardists are willing to prophesy an entire failure in the harvest. At least, there would probably be few well matured vegetables or fruits, berries, plums, pears or apples. Where bees have died out in certain towns the vegetable crops and even fruit crops have materially suffered, owing to the lack of the bee's inestimable service in transporting the male element of the flower, the pollen, so essentially necessary to fertilize many domestic vegetables and fruits. Even though horticulturists till, fertilize, prune, spray, and thin, their harvest may fail unless the bees are sufficient to pollinate the flowers. Beekeeping, therefore, may be considered the root and foundation of successful crop getting.

So particularly dependent are certain horticultural specialists that at least 2000 to 2500 colonies of bees are annually used in the cucumber greenhouses of Massachusetts alone. Within the last few years Massachusetts cranberry growers have found that honeybees assure greater success, in their million dollar enterprise. Similarly field-crop growers, as of melons and cucumbers, are introducing bees on their plantations. Likewise, the commercial orchardists, small fruit growers and the professional seed producers realize that it is most profitable to maintain apiaries.

Amherst, Mass.

Overstocking and the Distance Bees Fly

Also Touching On the Qualifications of a Good Rocky Mountain Location

BY WESLEY FOSTER.

WHEN the Editor of the American Bee Journal asked me to say something on the overstocking of locations in the West, and also something on how far bees fly, I thought the subject, if properly handled, should cover the qualifications of a good bee location. And here it should be said, that many beekeepers who have settled in the West have not been able to judge carefully of the most desirable locations.

Generally speaking, the older an irrigated district becomes, the less certain is the honey crop. Just notice that Colorado has a lower average crop than any of the Rocky Mountain States. The reasons for this are numerous. Alfalfa is cut sooner, because the great cattle ranches are being broken up; dairying is fast being taken up and cow hay is not allowed to stand in the field and bloom.

The methods of farming are improving and there is much less vacant, untilled land to grow up to sweet clover. The establishment of the beet sugar industry has had its effect upon the Arkansas Valley as a honey country in Colorado. Wherever a sugar factory has been built, considerable alfalfa has been plowed up, lessening the available bee pasturage.

THE HORSEMINT IS A VALUABLE DESERT FLOWER FOR THE WESTERN BEEMAN

Three acres of alfalfa to one colony is the ratio most common where overstocking has not occurred. And I find that where one colony of bees is found for every acre of alfalfa in a given area, that the poor crop and the failures come with an unwelcome frequency.

Sweet clover, acre for acre, is worth three acres of alfalfa, which is not saying sweet clover is worth any more than Mr. Frank Coverdale's estimate of $4.00 an acre. This value of an acre of bloom can never be accurately determined for it varies from year to year.

If sweet clover in abundance is accessible to bees within one-half mile of an apiary, I doubt whether they will go much farther, but I know they will fly across a valley a mile wide to sweet clover pasture, and in a season of drouth, I have known apiaries of mine to store honey in fair quantity (40 pounds surplus to the hive of comb honey) by flying over a dry hill nearly two miles to a well watered alfalfa and sweet clover pasture.

The distance of the flight of bees is pretty well determined in western Colorado, where the orchards cause trouble for the beemen. By removing apiaries two miles, little if any poisoning results. One mile, or 1¼ miles, does no appreciable good.

I believe that one mile is the average flight range of working bees in the Rocky Mountain region.

THE DESIRABLE LOCATIONS.

The Rocky Mountain region is one great cattle range, and in the valleys, where the hay is raised for the winter feed of these cattle, desirable locations are had. The large hay ranches are not yet broken up into smaller places in many valleys, so that the cultivation is not so intensive and the alfalfa stands in bloom for a longer time. Many of these valley locations have a very fine spring flow from the mountain bloom and fruit blossoms. Where these conditions prevail are the desirable locations. The bees have opportunity to obtain supplies of pollen, and there is in many places almost a continuous flow of more or less importance from March until October.

SWEET CLOVER.

I have harvested sweet clover seed for five years, and have observed conditions here in Colorado for some time.

Sweet clover of the white blossom variety is very hardy and will do well on a greater variety of soils than any other plant that I know of. It is inclined, however, to be patchy in its growth on poor soil—thick here and thin there. Wherever the soil is rich and well watered, a heavy growth occurs, so heavy in fact that the next year little if any will grow on that spot. This condition may be avoided, however, by cutting a hay crop and letting the second crop go to seed. The seed crop will not grow up so rank as to shade the ground and hinder the new seeding for the next year.

The best time to sow seed is in the fall within two weeks of the cutting of the seed crop. The seed germinates almost perfectly if sown before the seed coat becomes very hard. Two years ago I cut some sweet clover for seed and cocked up the clover in large piles. We had a week of rainy weather and practically all the seed germinated in the hay cocks. Green or slightly green seed seems to germinate better than the round, plump, yellow seeds, probably because the seed coat is not so hard.

White sweet clover has yielded for me as high as ten bushels of hulled seed per acre. This was on a very heavy growth, where little clover grew the next year—the ground was so well shaded that the next growth could not get a start.

The average seed production for me has been three bushels. Where one has 40 acres of it, it is impossible to prevent loss from shattering, before and after cutting, while threshing it out either by hand or with a machine.

If weather conditions are just right all the time you are cutting it, little seed may be lost, but extremely dry weather will make it impossible to cut very much without shattering off half or more of the seed. Cutting after a rain or early in the morning, while the dew is still on it, works best.

WILD POPPIES AND LUPINES FURNISH NECTAR AND POLLEN FOR THE BEES—THEY GROW ON UNIRRIGATED LAND

I have threshed my seed on a rack with canvas sides sloping to the center, and a screened frame in the center through which the seed drops into a canvas-lined box holding about 15 bushels. The seed is quite dirty, but can easily be cleaned in a fanning mill and then hulled in a scarifying machine. Running the seed-cleaner and scarifying machine will require three men. First run the seed through the cleaner, then hull the seed and scarify it by running twice through the cleaner again to blow out the hulls. If power is used on both the seed-cleaner and scarifying machine, from one to two tons a day may be easily handled by three men.

EUROPEAN FOULBROOD NOTES.

H. E. Hutchinson, of Paonia, advises transferring once directly upon full sheets of foundation, and saving combs, as he thinks it is not necessary to destroy them. Queens received through the mails proved very susceptible to the disease and what seemed very unsatisfactory was the way these queens were superseded. Strengthening colonies by uniting did not work very well with Mr. Hutchinson. Weak, diseased colonies were closed up completely; colonies of just fair strength were built up by giving hatching brood from colonies that remained healthy through the scourge of European foulbrood. Of 135 colonies, Mr. Huchinson saved 15, most of the 15 not showing the disease. Strong colonies with young queens can be cured of the disease by caging the queens, but colonies not very strong and vigorous should be transferred and requeened.

The difficulty with uniting bees to strengthen them is that, after uniting a lot of them, the result is not a strong colony. Transferring with even colonies of small strength will give good results, where requeening is also done.

Bees, the hives of which are placed too close together when the apiary is diseased show a large percentage of disease.

Boulder, Colo.

Production Costs and How to Figure Them

BY ARTHUR C. MILLER.

WHAT does it cost to produce a pound of honey? Easily asked but not easily answered. Suppose the question is put this way: How much does it cost per year to operate a colony of bees? Just about as hard to answer as the other, isn't it? And yet if you can get at the average cost of operating a colony of bees one year with another, you can always tell what your honey costs you, be it either comb or extracted, and the difference in cost between the two you will find to be so slight that you will not think it worth considering. That statement will cause protests I know, but it will be up to you to prove me wrong.

I have some satisfactory answers to my questions for the conditions of the eastern States, but some factors will be modified by conditions in other sections. I will tell you how to proceed to find out for yourselves.

The first step is to take an inventory of your possessions, of all those things which are essential to the conduct of the business. This will include all hives, supers, extractors and other tools, tanks, buildings used or built specially for the business. If you incidentally use a room in your dwelling or some other building, even though if you did not have it you would be compelled to build for the purpose, the dwelling would not be included in the inventory. On the other hand, if you own an automobile and use it chiefly for your work, even though many miles are run for pleasure, it should be included in the inventory. Next, do *not* include the bees. Why? Are they not the whole thing? What would the supplies be worth for honey production without them? Look at it this way and see if I am not right; see if omitting an estimate of the possible value of the bees does not simplify the figuring of the invesment beside being correct.

First, a man buys a colony of bees at say $10. Then he buys hives, supers, etc., from time to time, increases his bees by swarms or by division and ultimately has say 500 colonies. What have the bees cost him? As soon as the number of his colonies was above perhaps 25 they returned enough cash for honey to pay for the time he spent in handling the colonies, in getting the honey. The increase is found to be incidental to the other work, and it would be difficult and useless to determine what part of the time was devoted to it, so we won't try. In other words, it is a necessary incidental of honey production, and we can very properly let it go into the cost of production. Or if you still insist, then tell me how much a swarm of bees *costs* you? Aside from the hives and supers to house it and the working capital to operate it, how much cash does it cause you to expend for it? None.

Here is another way of showing the reason for not including the bees. The 500 colonies and equipment can be sold for how much? Just about the first cost of the equipment, seldom more, often less. The equipment without the bees would bring very little as compared with first cost. In other words, the bees have a *productive* value; they can gather honey or help us sell our equipment for what it is really or nearly worth, but they have no cash value. You may say you can sell the bees "by the pound." Yes, but deduct packages and labor and the reduced price the hives, etc., will bring and see where you stand.

The value to place on your equipment you must determine for yourself. If it is all fine new factory stuff, well made up and painted, that is one thing. If it is box shop or home-made stuff it is another. If it is old and has been long in use, what is its present worth? Whether it is "standard" or not is not of so much consequence. How much did it cost you or how much is it worth? That is, what is the amount of capital you have in equipment?

An estimate based on the factory-made outfit of some big eastern operators is in round figures about $4.50 for each hive with its necessary supers and brood foundation, and 50 cents as its share in the other equipment such as extractors, smokers, tanks, etc., making a total of $5.00. Next comes an item which I have seldom found to be included or considered by beekeepers, and that is working capital. It should be at least equal to the fixed investment of $5.00. In other words, every colony of bees in a commercial apiary should be considered as representing an investment of $10. In this figuring the few odd hives, etc., usually on hand are included in the general estimate. If a considerable portion of one's hives were empty, one would have to figure them in at $5.00, because it is capital tied up, and when they go into service again by being stocked with bees, $5.00 of working capital should be added for each one.

If you have not the working capital you must not figure it, but you should have it. Failure to have sufficient working capital is the cause of trouble in many lines of business besides honey production. To the beekeeper it means trouble in getting needed supplies at the most favorable time and price. It also means the necessity of selling the crop quickly for most any offer. Working capital is needed to pay for labor, insurance, taxes, freight, containers, sections, super foundation, living expenses and most important of all, to carry the business and its owner over a year or two of whole or partial crop failure. The annual per colony charge against working capital at 6 percent is 30 cents. The loss to the operator who does not have working capital is quite apt to be several times 30 cents, so bear in mind that proper working capital reduces cost.

Having found the amount of the investment the next step is to determine the operating costs. To figure the expense of conducting the business the following items are to be included: interest on the investment, insurance, taxes, labor, owner's salary, and depreciation and upkeep. The owner should charge the business for his services at least as much as he could earn in any other gainful occupation in which he is skilled. If all or a major part of his time is devoted to bees, this is easy to figure, but if they take only a minor part of his time (as a side line) it is more difficult, still a satisfactory estimate can be arrived at by a little pains. The business should only be charged with what he is worth, what he can earn in some other business in which he is skilled. All returns over that and the other charges is "profit" on the investment.

The proportion to charge to the sundry items of expense is estimated as follows: Interest, 6 percent; labor, 10 percent; depreciation and upkeep, 10 percent; insurance and taxes, 1½ percent; total, 27½ percent. Here I have only figured under labor (at 50 cents an hour) the amount devoted to the bees, in getting ready for and during the harvest, packing the crop, and closing down for the season. The owner's salary for the rest of the year, if he uses that time for no other gainful work, must be added.

By this figuring you will find that you must get $2.75 (27½ percent on $10) from each colony of bees just to cover running expenses. On an average annual per colony yield of 50 pounds, this makes the cost 5½ cents per pound. Charging 10 percent for "upkeep and depreciation" against the working capital (cash) is not strictly correct, but as I have omitted specific allowances for loss by "bad debts" and sundry other leaks which are so easy to forget or overlook, and as the beekeeper's outfit deteriorates so much more rapidly than things under cover and having constant care, on consideration I decided that charging 10 percent against the whole capital would more nearly represent the true conditions and at the same time simplify the subject for the beekeepers.

The specialist in order to keep costs down must make his business big enough so it can carry the expenses of his idle time without adding too much to the cost of operation, per colony. As a rough illustration: The 10 percent charged for labor (or $1.00 per colony) covers only time devoted to the business. If the man does all the work himself, and has 500 colonies, he gets $500 for his labor. He is idle the rest of the year and needs, and in some other occupation could earn, in a year, $1500, therefore he must charge for cost just $1000 more or $2.00 per hive, making the labor item 30 percent instead of 10 percent. On a 50 pound average yield it means increasing the cost of the honey just 4 cents per pound, or, instead of the 5½ cent cost prices as given elsewhere in this article, the cost rises to 9½ cents. Obviously that man must keep more bees, or raise his average per colony yield, or do both, if he would reduce the cost of his honey.

Operative costs will be pretty much the same one year with another unless disease breaks out or some other exceptional or abnormal condition arises. After keeping records for a few years you can determine with fair accuracy your average annual per colony cost. Then determine your average per colony yield over a period of years and you can easily figure the average cost of honey per pound to you. In exceptionally good years, those of heavy yields, the per pound cost drops, but the next year may be one of failure, so you must use *average* to figure on.

The figures I have given of cost per pound are tentative only. We should have returns from many persons and many places before we accept any figures as exact. The amount of capital per colony will vary, the average annual yield per colony will vary, the time devoted to each colony will also vary with different individuals. The rate of charge for labor will be debatable, but until a better figure is found, 50 cents an hour will do very well, provided we all use it. This rate is for the owner, not for hired labor. The interest rate may be higher in some sections. The rate for depreciation and upkeep I believe will be found about right.

Those with whom I have discussed the subject lean towards the belief that my figures of cost are too low, and I shall not be surprised if that proves to be true. Now, go to it and tell us what your figures are.

Have I taken off some of the glamor of the business? Have I given you a bad quarter hour? Console yourself with the fact that in your misery you have much company. Scrutiny of costs is going on in many lines as never before, and we must know ours. Get busy.

Providence, R. I.

Production Costs—How to Figure Them

BY THE EDITOR.

WHAT does it cost to produce a pound of honey? The answer depends upon so many things that every man must figure for himself.

How much did your apiary cost you? If you have purchased two or three hives of bees and have made your increase from these, the apiary has cost you the value of the material, hives, etc., and the labor spent by you in producing the increase. While you have produced increase from your bees, you have secured but little honey, for intensive increase of colonies is always done at the expense of surplus crop. However, it should not be difficult to figure what your colonies have cost you, if you take all these matters in consideration.

After your apiary is established, the cost of honey will be represented by the interest on the amount invested in bees, the depreciation, the rental of the ground, the interest and wear and tear on the building which is usually very insignificant and, above all, the labor. What your time is worth should determine the cost of production.

If you are in a good honey-producing region, where crops are almost uniform, the result will prove profitable. As you must take the average of one season with another, in order to figure costs, the less crops you have the greater the cost of production. If you are trying to keep bees for a living, you must therefore locate in a favorable spot.

If beekeeping is for you a side issue and you give to them only your spare moments, you can afford to charge to this business a lower price per hour or per day than you would otherwise, for the moments thus employed would be otherwise lost as far as profits are concerned, and perhaps the healthfulness of beekeeping is a benefit to you, especially if you are a person of sedentary occupations otherwise.

The number of colonies you keep in each apiary will have much to do with the question of profits. If you have only 50 colonies in an apiary that could yield as much per colony if there were double that number, you will be at a disadvantage, since you could probably look after a greater number at each trip or at each visit.

Your method of beekeeping will have much to do with costs. Numerous manipulations must be followed by greater advantages in results or the labor eats up the profits. As a rule, the simpler methods are the more profitable. But a well selected breed of honey producers, convenient implements, and well made uniform hives are requisites *sine qua non*.

The difference in cost between comb and extracted honey will be found important. The amount of labor required, the amount of swarming caused and the cost of equipment have to be taken in consideration. The sections and foundation used in the production of comb honey must be reckoned, since they are each year to be replaced, while the combs supplied to the colonies run for extracted honey are retained from year to year and are part of the capital on which only interest rates and sinking fund are figured.

The cost of running an apiary in a season of heavy crop is greater than that of a minimum crop, for in the latter case the number of manipulations is reduced. But in a very unfavorable season, when bees have to be fed at different times, not only must we add the cost of the food given, but we will find our labor considerably increased over that of the indifferent season.

The last thing for us to do in figuring costs is to take the average of a number of seasons. Good bookkeeping is required. But the beekeeper is often like the average farmer. Beekeeping and bookkeeping are not often found together. Yet as the cultivation of bees is becoming rapidly a specialized pursuit, bookkeeping in beekeeping will be oftener connected in the future.

* * *

Painting Foundation With Melted Wax

BY J. E. HAND.

On page 164, is an interesting article on painting foundation with melted wax. In my opinion, the efficacy of this method hinges on several contingencies: First, will it supersede wiring? Second, is foundation heavier than light brood advisable? Third, is it advisable to have more wax in section foundation than is contained in the thin grade? Since these questions cannot well be answered in the affirmative, it would seem that painting foundation is of doubtful expediency, but there are two more witnesses to be examined. 1. Do bees accept painted foundation enough more readily to pay for painting? I have a suspicion that this question will be answered by some in the affirmative, but with a strong force of bees and a good flow of nectar, involuntary wax secretion will begin and abundance of natural wax provided, which would not be utilized with painted foundation; therefore, it is not yet clear that painting is profitable.

But there is still another witness to be heard from, "Is wax secretion a voluntary function, or is it an involuntary process? In my opinion, based on many years of observation, wax secretion is an involuntary process over which bees have no control. Under certain conditions bees cannot keep from secreting wax, and the conditions are: First, a moderate harvest when considerable nectar is digested to make honey; second, any contingency that would cause bees to retain honey in the sac or stomach for a considerable time, as in shipping long distances under stress of excitement. Molding wax into comb is evidently an innate voluntary habit, but I cannot conceive of a condition under which bees voluntarily secrete wax. It is, therefore, apparent that considerable wax is wasted when extracted honey is produced with drawn combs. If these deductions are correct, I prefer to sell my surplus wax, and get a lot more by having a few combs drawn in every extracting super, they cost nothing, and are valuable assets, like money in the bank. Personally, I regard wax as an article of commerce just the same as honey, therefore, am loth to waste it unnecessarily.

Birmingham, Ohio.

[It is not at all apparent to us that wax is wasted when extracting combs are supplied in the supers. There are

THE DESERT FLORA IS PROFUSE IN COLORADO NEAR THE FOOTHILLS always a few spots where wax is needed, to repair or lengthen cells, and we have never seen wax thrown away in greater quantity than is thrown away accidentally in a hive where the swarm has to build all the combs. What do our extracted-honey producers say about this?

Bees voluntarily secrete wax when a gap is made accidentally in the middle of the brood-chamber. At such a time they also use particles of wax taken from other combs, with very evident aim at economy, and the comb then built often has more or less the appearance of old comb. To witness this peculiarity it is only necessary to remove a comb from the center of a strong and wealthy colony in early spring, replacing it with a frame containing only a narrow guide, or starter. —Editor.]

Advertisng Honey

BY A. F. BONNEY.

FROM observations on Mr. Gano's article in the March American Bee Journal, I am fully convinced that the solution of the advertising problem for honey producers is in personal, local, and individual advertising. I do not believe our product, honey, can be advertised profitably in violation of established rules.

With all due deference to Mr. Gano's position in the advertising world, I am compelled to differ with him from start to finish. He is ignorant of both the honey and orange business. As proof, he says in his article (March, 1916) that he could not tell his wife whether the bees put the honey in the wood frame or if man put it in, and lays great stress on the claim that with only advertising to help them the orange growers expected to "double the orange shipment from California in the next five years." Were he posted, he would have known the following sad, sad tale:

> Washington, D. C., March 6.—A tariff on citrus fruit was suggested to President Wilson today by Representatives Kettner, Raker, Randall and Church of California, who told him that citrus fruit growers in their State were losing money because growers in Italy and Sicily were dumping their products in the United States as a result of the war.

I have before me a letter from California, which says in part:

"There are approximately 12,000 citrus fruit growers in the State of California. The annual crop amounts to between 40,000 and 50,000 cars, and the total value of the crop ranges from $15,000,000 to $25,000,000 f. o. b. California."

It is from Mr. Arbuthnot, secretary and manager of the LaVerne Orange and Lemon Growers' Association. As an advertising proposition there can be no comparison between the citrus fruits and honey because the production of oranges in the United States is practically limited to Florida and the south half of California. Honey is produced in every State in the Union, in Canada and Alaska. There are 12,000 orange growers, and they nearly all belong to their association.

Dr. C. C. Miller once guessed for me that there were in the United States about 200 persons who depended wholly upon honey for a living. As to the number who produce as much as 1000 pounds ($100 worth) annually, it is a wild guess. The number who belong to any organization pertaining to apiculture is almost negligible. The citrus fruit growers of California spend $350,000 annually to sell $25,000,000 worth of oranges.

How much could the honey producers of the United States be persuaded to spend to sell $25,000,000 to $50,000,000 worth of honey? $10,000? I doubt it, judging from my own case, for with $25 I can do more for myself than any advertising firm can. I can sell more honey and get better prices.

Packing oranges calls for one box which is made of the cheapest native lumber for each 100, 150 or 200 oranges, according to size. The quality of Sunkist oranges is supposed to be the same, but that is an ad writer's dream. Honey calls for expensive containers from 6-ounce glass jars to 60-pound tin cans. Comb honey particularly is expensive to produce and ship, in time, sections, foundation and shipping cases. Orange producers have practically no local market; honey producers have.

In regard to the Orange Producers' Association saving their members on supplies, they only have to buy "lumber and nails." Cheap Mexican labor does the rest.

The honey season is long.

Oranges smell better than they taste. Honey tastes better than it smells.

Oranges may be eaten out of hand at any time and place.

Honey is practically restricted to the table.

Oranges require no special containers.

Honey must have tumblers, cases or cans.

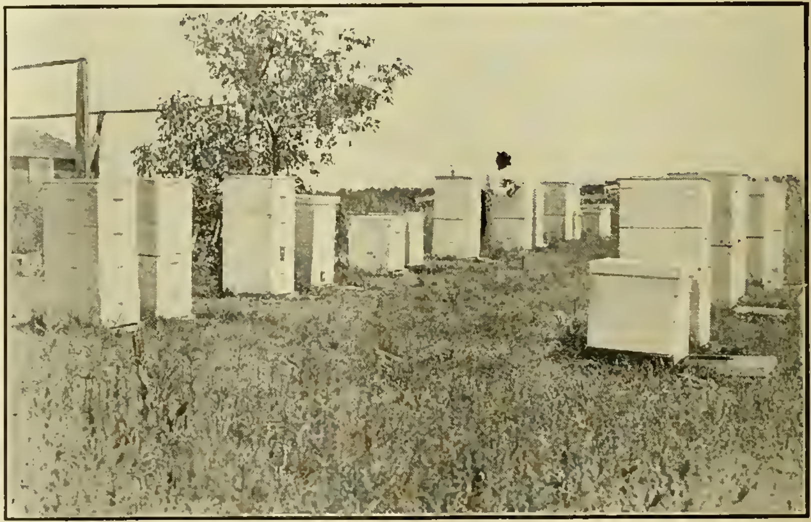
The California people have made a name for oranges, navels, Sunkist. As to these oranges being better than other navels I have my doubts, for I have taken the tissue paper wrappers from some mighty poor fruit, but oranges are so similar that they may be called "all alike" and not miss it much.

Honey is everything from the finest Bonney honey to bitter and even poisonous kinds; therefore, it will be practically impossible to have a name of a National advertising character. Some individual may invent a name and even copyright it as "Airline" honey, or Mr. Mason's "Sweet Clover Brand," Mr. Roth's "Quality Honey," or Mr. Hassinger's "Bee Line Honey," as they are doing, which is my idea of *personal, local* advertising.

This article is intended to help. There is, I know, a way to advertise honey nationally. Just get together $100,000 and turn it over to some big advertising firm and let them tell the people of the world that honey is a mighty good thing to eat. That is all there is to it. Will it pay? I—er—I don't know, nor does the big advertising firm. Millions of dollars are sunk each year in the United States in advertising schemes.

The trouble with beekeepers is that not 10 percent of them care to advertise, and of that number not one in a hundred can write an ad, but there is a rule to help them, and that is "boil it down." Do not tell your customers that honey, the most delightful sweet in the world, is good for boils, colds and constipation. If you can afford it, use "Facts About Honey," with which to keep in touch with your customers, otherwise use a postal card with your name, address and price list, and send these to bankers, farmers and others within a reasonable distance of your home. Do this *every year* if you would succeed.

Buck Grove, Iowa.



APIARY OF W. C. AXELTON, AT GRAETTINGER, IOWA, WHICH PAYS ITS OWNER AN AVERAGE OF TEN DOLLARS PER COLONY PER YEAR

Advertising—A Reply to Bonney's Criticism

BY FRANK C. PELLETT.

PRODUCING an article is one thing, selling it is quite another. Few men are efficient at both ends of the same business. The fact that expert advertising men draw larger salaries than in any other department of commercial activity proves in itself that the game is not an easy one.

When the Editor asked Mr. Gano for some principles that would assist in getting desirable publicity for honey he did not ask for information concerning its production. Fifty years of producing honey for a livelihood equipped the editor to handle that subject himself. Sometimes it is an advantage for a man who would undertake the selling campaign for a commodity to know nothing of it in the beginning. He very naturally begins to ask questions, and the thing that he wants to find out is what the general public wants to know also. The fact that Mr. Gano did not know whether the bees put the honey into the section proves his point that the beekeepers have not been alive to the benefits of well directed publicity. If honey and its process of preparation for use was as well known to the public as is butter, more of it would be consumed by men in that class in preference to inferior substitutes.

The fact that we beekeepers some times find it hard to dispose of a crop that aggregates only about a pound per capita for the population of the United States, proves in itself that we are unfamiliar with the rules of advertising as practiced in the business world today. There is no reason why the public will not consume ten times the amount of honey that now goes to market if our product is properly placed before the readers of our newspapers and magazines. The average merchant wastes half or more of his advertising appropriation in ill-advised copy or poor mediums. The advertising agents make a study of advertising and get results for their patrons at less cost. Otherwise they could not exist. Very few successful business men will risk placing their own advertising. The editor wishing to secure the best possible advice for his readers appealed to one of the largest advertising concerns in the world. They handle advertising accounts of every conceivable kind from oranges to automobiles.

APIARY OF H. E. ROTH AT STRAWBERRY POINT, IOWA. 100 POUNDS PER COLONY IN 1915

In the nature of things they cannot know the details of the production of all the articles, but they do know how to sell them. When the Editor sent the writer to Chicago to see what he could learn about the honey markets and to write the article which appeared in the June number, he visited this advertising agency. To his surprise he found more people employed in their offices than would equal the entire population of a half dozen places like Dr. Bonney's town. When the Doctor says that all the supplies the orange growers have to buy are lumber and nails, he makes it evident that he knows less about oranges than he accuses Mr. Gano of knowing. How about cultivators, spraying machinery, etc.? Knowing so little about the production of oranges he is hardly competent to attempt a comparison. He would likely be surprised to learn the size of the orange growers' supply bills.

Bonney writes from the standpoint of the small producer who has no competition in the local market. Mr. Gano writes from the standpoint of a business man familiar with the congestion of the large markets, and with the general methods of marketing. Everybody who knows anything of the conditions admits that the orange growers are vastly more prosperous since their organization and advertising. Bonney has failed to show that the same principles would not apply to honey producers. Butter *is* advertised nationally. If the Doctor was a careful reader of the magazine advertising pages he would long ago have seen the large advertisements of Meadow Gold Butter. Not only this, but several dairy organizations are constantly on the watch to guard the dairy interests against unjust competition in any quarter. Hundreds of publications carry their advertising calling particular attention to the merits to the output of their special breed of cattle, as the Holstein or Jersey clubs.

A large number of lumbermen who are engaged in sawing cypress timber contribute to the fund that pays for the advertising of cypress lumber that appears in so many high class publications. While any member may not be able to trace a special sale to his own yards as a result of this publicity, he knows that the extent to which the public comes to realize the special merits of cypress lumber for the purposes to which it is best adapted will benefit him personally. Lumbermen are doing business on a business basis, and are prosperous as a result.

While Dr. Bonney's methods may succeed in disposing of a small crop in a local market they are not applicable to the industry as a whole, and cannot be used to make a general market for honey as a commodity in a national way.

Under present day conditions no industry can thrive greatly without general cooperation among the producers. When the beekeepers unite and fight together instead of fighting each other then will honey production become a profitable industry. The Doctor's tendency to belittle the business is to be regretted. His statement that less than 200 persons are largely dependent upon honey production is erroneous. More than that number could be found in many limited localities.

Atlantic, Iowa.

Does the Female Osmia Decide the Sex of the Egg?

BY JOHN H. LOVELL.

IT has been commonly believed that the queen honeybee can lay drone or worker eggs at will. The observations and experiments of Fabre with several solitary bees belonging to the genus Osmia are in this connection of much interest. Several species of this genus build their cells in a continuous series in the hollow stems of brambles, from which the pith has been excavated, or in the old deserted burrows of other solitary bees. When the tunnels are sufficiently long and large to contain a complete laying of eggs, a series of cells containing female eggs is first built, and then a series of cells with male eggs. If, however, the tunnel is short, and it is necessary to break up the laying of eggs and divide it among several burrows, then in each case female eggs are laid first, followed by male eggs, for instance, if the tunnel is only long enough to contain two cells, the bottom one contains a female egg and the upper one a male egg.

The males of Osmia are much smaller than the females, and the cells in which they live in the larval state are consequently smaller and contain a smaller stock of provisions than the cells of the females. The mother Osmia must, therefore, instinctively be conscious that she is about to lay an egg correlated with the small cell and the little store of food; that is, so far as this discussion is concerned she knows beforehand the sex of the egg she is about to lay. Not infrequently the same tunnel or burrow is used for several seasons by species of Osmia. Here the female bee has no power to alter the succession of the cells, and she invariably lays female eggs in the larger cells and male eggs in the smaller cells. If, for example, the mason bee has at her disposal five cells, three large and two small, in the large cells she puts females and in the small cells males. It is thus impossible, says Fabre, that there should be an invariable succession of the eggs.

Fabre induced many mason-bees to make use of glass tubes, instead of hollow reeds and brambles, in which the method of procedure could be more easily followed. When the glass tubes were of normal size each series of cells, whether complete or incomplete, began with females and ended with males. Sometimes females were more abundant, at other times males; if the tube was reduced to the exact length of two cells the bottom one was a female, the upper a male. If the mother Osmia can lay an egg of either sex, as she pleases, the question arises, may it not be possible to induce her to reverse the usual order and lay male eggs first. For this purpose Fabre employed two glass tubes of very different diameters set end to end. The black tubes or cylinders were too small to contain female cells, and if used at all must contain males. Now what happened? The mothers laid male eggs in the small rear tubes, the exact converse of their way of proceeding under normal conditions. When they came to the larger front tubes they at once laid female eggs topping off with males as usual.

The nests of a species of Chalicodoma, are round balls of mud varying from the size of a walnut to that of an apple. A part of the cells are deep, a part shallow. The female of Osmia tridentata often uses them, laying females in the deep cells and males in the shallow ones. Fabre scraped off the mud from the outside of one these nests so that it contained 12 shallow cells and 2 deep cells. In all the former the mother Osmia laid male eggs, and in the latter female. The following year the experiment was repeated with a nest of 15 cells; but this time all the cells were scraped down until they were shallow. Every cell was occupied by males, all the offspring of one mother. "He would indeed be difficult to please," says Fabre, "who would not bow before the results of these two experiments."

A single additional experiment may be briefly described. Fabre also gave his species of Osmia empty shells of the garden snail so plugged with mud in the widest part that there was hardly space for any except male cells. One of these snail-shells contained 25 males and only one female. It is obvious, says Fabre, that the Osmia is able to reverse the order of her laying and start with more or less long series of males before producing females.

"So as to be able to give each larva the amount of space and food that suits it according as it is male or female, the mother can choose the sex of the egg which she is about to lay. To meet the conditions of building, which is often the work of another or else a natural retreat that admits of little or no alteration, she lays either a male egg or a female egg as she pleases. The distribution of the sexes depends upon herself. Should circumstances require it, the order of the laying can be reversed and begin with males; lastly, the entire laying can contain only one sex."

(An extended description of Fabre's observations will be found in "Bramble Bees.")

Waldoboro, Maine.

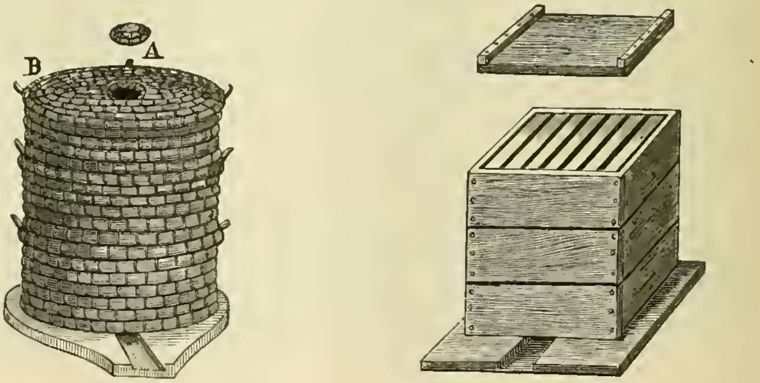
The Sectional Hive

BY F. GREINER.

It is not to be wondered at that the readers of our bee journals receive the impression that the sectional hive has gone out of use, for we do not find anything written on the subject in recent years. I do not know whether I am the only beekeeper who uses them at this time, but I think there are a few, some quite extensive beekeepers, who use nothing else. However, the fact cannot be denied that this style of hive has not gained in popularity.

The original sectional hive was called the Heddon hive from its inventor. Our lamented friend, Hutchinson favored it at one time. A few of us in New York State tried it but discarded it as not practical. I was among them; I was glad when the colony in this hive died and I did not have to bother with it any longer. We had almost forgotten the Heddon reversible sectional hive when Mr. Hand came out with his shallow brood-chambers with their close fitting closed end frames. As the second inventor explained the management of these hives, also Mr. Taylor a similar hive, we became convinced that the trouble was with us and not with the hive, and we made another attempt using these hives in our yards. We were not only successful this time but it afforded us pleasure.

We built more and more of them, and today I have half of my bees in these little sectional brood-chambers, and I am satisfied that I can run more colonies when they are in sectional hives than when in standard hives. In order to get along at all with them one must get away from the idea of handling frames singly. These hives were not built with that intention; they were built with the idea of handling the frames in full sets. It is a matter of handling hives, not frames. If your management is such that you cannot avoid handling frames you will never like a closed-end tight-fitting sectional frame hive. In the eastern portion of New York State we have beekeepers of note who use a sectional hive with loose hanging frames. It is liked very much by these honey producers; they certainly make a success of it; I have a few such hives in use, but I prefer the closed-end style Hand or Heddon pattern.



OLD STYLE EKE HIVES

When our management demands the manipulation of brood-frames singly, the larger the frames the better and quicker we will get along with our work. The frames of the sectional hives are not intended to be manipulated singly; they must of necessity be very shallow, so that we can tell what they contain by taking a look at them from the top or bottom. The shallower they are, the easier we can drive or shake the bees out. There are no hiding places between and around the frames except the straight long bee-spaces between the combs, and those are easily cleared of bees when necessary.

It may not be so easy to find the queens in this type of a hive, but we do not have to see the queens every time we visit our bees. During the spring months we have no difficulty to hunt out queens, later in the season we simply don't.

The bee-spaces between the shallow brood-chambers may be considered an objectionable feature, but they are not; they are an advantage in several ways; you will find it so when you get to using the hive.

Naples, N. Y.

[Sectional hives, before the time of movable frames, were known under the names of "ekes," "nadirs," or in French as "hausses." Hamet, in his "Cours d'Apiculture," 1859, recommends those hives above all others. They consisted of shallow stories, all alike, with slats at the top to which the combs were attached. In cases of necessity, the combs could be loosened from the ends and lifted out. Dzierzon's movable-comb hives were built similarly but were not shallow, neither did they have a movable ceiling.

A few beekeepers, like Friend Greiner, use exclusively shallow sectional brood-chambers. Perhaps the most successful man with these hives is our Texas friend, Louis H. Scholl, who claims that at least 10 percent more honey can be produced with his method and his shallow brood-chambers than in any other way. The management has much to do with the success.—EDITOR]

◆

Serious Effect of Stings

BY W. S. PANGBURN.

IN the American Bee Journal for November, Mr. Frank C. Pellett describes the serious illness of his wife, caused from being stung on the neck by a bee. Two cases somewhat similar occurred in this neighborhood a number of years ago.

In the first case, the man had kept bees in a small way all his life until a few years previous to the incident. He had purchased two swarms of bees at a sale in the fall, and the next spring, while working with them, he received a sting on top of the head. In a very short time he commenced to get sick, body and limbs swelled; his fingers swelled until they stuck straight out, and his ears were about twice their natural size. His eyes were bloodshot, and his throat and tongue swelled until he could hardly breathe, and his body finally got spotted all over. He told me that he never suffered so in his life.

The other was a man who was helping me in haying, and on the last load that evening he got stung by a bumblebee on the calf of his leg. Nothing was thought of it until after the load was off and we were in for supper, when he was taken with a terrible itching sensation. His face, hands and arms resembled red flannel in color, and the swelling was similar to the first case only not so bad. I never saw a man get in such a condition in so short a time. I did not know what to do, for at that time I had had very little experience with stings. I wanted to take him home, but he said no, that he could walk. He lived just one mile from us. He did not seem sick, as he was joking and laughing all the time. On the road home he stopped at a neighbor's about 80 rods from our house and told them the circumstance, and the lady brought out a pan of sweet milk, and told him to bathe his hands and face with that, which he did. It relieved him and the itching stopped almost immediately.

It is very evident that some people cannot stand the poison from the sting of a bee, no matter where it is inflicted. I know people who were severely stung in childhood and who, if they receive a single sting now, suffer the same effects as with the first severe stinging.

In the footnote to Mr. Pellett's letter Mr. Dadant says: "It looks as if, in the above mentioned case, the poison had reached an artery or a vein so as to get into the circulation instantaneously. Luckily, such instances are rare." I would like to ask Mr. Dadant if he thinks the same thing would occur with the veteran beekeeper who had stood the "shot and shell" for years." If that was the case, we would hear of it more frequently. Very few persons who keep bees for any length of time get along without getting a severe stinging at some stage of the game, and we all know the bees are not at all particular *where*. In the writer's opinion *it is impossible to work with bees and avoid all stings*, as some brag of doing. The beekeeper who cannot stand a few stings without getting the effects described is treading on dangerous ground.

Personally, I had rather be stung by a bee than bit by a mosquito. But, then, I think I am inoculated. In the past five years I have been letting the bees treat me for rheumatism; the beauty of it is one can take a treatment at any time and it doesn't cost anything. As to results, I have nothing to say except I do not care to express myself in the presence of Dr. Bonney.

Center Junction, Iowa.

[I believe Mr. Pangburn answers his own question, when he says "I am inoculated." As Mr. Langstroth said: "It may be some comfort to novices to know that the poison will produce less and less effect upon their system. Old beekeepers, like Mithridates, appear almost to thrive upon poison itself."—EDITOR.]

MISCELLANEOUS NEWS ITEMS

New England Meetings.—When this number of the Bee Journal reaches the subscribers, the Editor will be in New England, and neighboring States, making his proposed visit organized through the kindly efforts of Prof. Burton N. Gates, of Amherst, Mass.

Up to the present time, July 18, the following meetings have been planned:

July 29—Massachusetts Society of Beekeepers, Glenwood Farm, summer home of Frank R. Swert, West Mansfield, Mass.

July 31—New Jersey meeting, Mount Holly, N. J.

August 1—New Jersey meeting at Elizabeth, N. J.

August 3 and 4—Connecticut meeting at the Agricultural College, Storrs, Conn.

August 5—Worcester County Beekeepers and Eastern Massachusetts Society at W. E. Parker's, West Boylston, Mass.

August 10 — Berkshire Beekeepers' Association at Pittsfield, Mass., at Hon. W. Murray Crane's estate. A three-minute walk from trolley. If it rains, meeting will be held in Y. M. C. A. Hall.

August 11—Eastern New York, place not yet named.

August 12—Adirondack Beekeepers' Association at Moreau Farm, one mile from the station, H. E. Gray, Fort Edward, N. Y.

August 14—Vermont Beepeepers' Association, Addison House, Middlebury, Vermont.

Correspondence for the Editor should be addressed in care of Prof. Gates, at Amherst, Mass.

A delightful time is anticipated.

◆

The Western New York Honey-Producers' Association will hold its annual basket picnic and field meeting on Saturday Aug. 12, at the apiary of Roy Wisterman, at Dysinger's Corners, N. Y., which is located on the Lockport-Akron road, six miles southeast of Lockport, or 10 miles northwest of Akron, or four miles south of Gasport, N. Y. A good program is in preparation, and a most enjoyable time is looked for. Bring your friends, your veil, and don't forget the basket lunch. All beekeepers welcome.

WILLIAM F. VOLLMER, *Sec.*

◆

A Busy Spot.—The Dadant family has produced during this clover crop, more honey than it ever did. We have just put up the 125th barrel of clover honey.

Our largest day's extracting yielded 5700 pounds, and we did not use a power extractor either.

◆

Correspondence. —We are receiving the American Bee Journal regularly, the May number having arrived yesterday, and I thank you for your kindness. The blooming season has been very fine so far. The black locust (*Robinia Pseudo-acacia*) has just closed its blooming, which has been hurried a little early by a storm. We had ample fruit bloom and kale. Now the tulip trees (*Liriodendron tulipifera*) are about to bloom, and we expect the sweetly perfumed lindens to open next week.

My father spends much time with his bees. He had but few swarms this year, so we are expecting a good honey crop.

With my thanks I send my compliments and those of my father.

[MISS] VALENTINE VISCONTI.
Cernusco, Province of Milan, Italy.

◆

Honey Crops in Russia.— According to the Russian Beekeepers' Review, a Mr. Kormiljcew harvested from one colony 688 pounds of extracted honey. At the close of the crop the colony had a working force with a weight of 37 pounds. From this he tries to show that the crop of any one colony is in direct proportion to the working force, such proportion being one-half of the square of the weight of the working force. In other words, a colony with a weight of five pounds would produce 12½ pounds of honey, one of 10 pounds would harvest 50 pounds of honey, while one of 40 pounds should produce 800 pounds of honey annually. At this rate, if a person could only have two or three 80 pound colonies in his yard, he would be pretty well fixed for honey on his table during the winter.

—*Translated by P. Schaffhauser.*

◆

Advertising in Colorado.—A recent letter from Mr. Rauchfuss, of the Colorado Honey-Producers' Association, says that at their field meet in Ft. Collins in June, there were over 120 people in attendance. A record breaker. In this letter he also encloses a little slip which they get out with all correspondence and which reads as follows:

HAVE YOU EVER SWEETENED BERRIES WITH HONEY?

IF YOU HAVE NOT, TRY IT TODAY

IT IS DELICIOUS

In addition to sending these out himself, Mr. Rauchfuss is asking berry growers to include some of the slips in all crates sent out. It not only helps the sale of honey but it increases the sale of berries. Try it in your locality.

◆

Kansas State Fair Premiums.—The State Fair of Kansas will be held at Topeka Sept. 11 to 16, with Mr. J. W. Priddy of that city as superintendent of the Bee and Honey Department. The amount of premiums offered in this department amounts to about $150. Kansas beekeepers are urged to enter in the competitive exhibit for the prizes. Write to Mr. Priddy today for a list of exhibits with entrance blanks, etc.

It will not only give you an outing and probably get you some prize money, but above all it will be the means of disposing of a quantity of your honey, and of making many new customers.

◆

Another Sweet Clover Bulletin.—One of the shortest and still among the most complete booklets issued on sweet clover is that issued by W. E. Watkins, County Agent at Iola, Kan. The bulletin was issued in conjunction with the Kansas State Agricultural College and the United States Department of Agriculture.

It contains 16 pages of very valuable information on sweet clover: the soil required, manner of treatment of same, seed and seeding, and in fact almost all requirements in concise form. The booklet is illustrated with ten cuts, showing the relative value of different methods of treatment, etc.

◆

Announcement—Colorado Honey-Producers' Association Protective Club.—At the annual meeting of the Colorado Honey Producers' Association, Dec. 29-30, 1915, a protective committee was appointed to work out plans for an organization to aid in protecting member's apiaries from molestation by thieves. Twenty-two dollars were paid in by 17 charter members.

The committee appointed to prosecute this work consists of Herman Rauchfuss, Chairman, Englewood; Wesley Foster, Secretary - Treasurer, Boulder; B. F. Hastings, Arvada.

The admission fee of $1.00 is to be paid upon joining the club.

An assessment fee of 2 cents per colony, payable in advance, must be paid by each member the first year. Later assessments to be levied when the funds in the treasury fall below $100. Such assessments, however, shall not raise the fund in the treasury to exceed $150.

Funds of the club are to be spent as follows: Printing reward cards (to be furnished members to be posted about their apiaries), stationery and postage, necessary expenses, as allowed by the committee. Rewards.

Cases of persistent molestation to be reported to the committee for special action.

Claims for reward and all bills against the club, to be passed upon by the committee before payment (no reward to be paid to the plaintiff in any case.)

Members are to notify the secretary of the club or local representative at once, when or where thieving or molestation occurs.

The reward cards will be furnished members when joining.

The following is the text for the cards:

FIFTY DOLLARS REWARD.

$10 to be paid for information leading to the arrest, and $40 additional for conviction of any one tampering with or molesting this apiary.

Inform C. H. P. A. Protective Club, 1424 Market Street, Denver, Colo, or ———, Local Representative.

This announcement merely gives an outline of the purpose of the club. By-laws for the government of the organization will be submitted to the members for approval at a later date.

◆

Queenbees Supplied at Rate of 25 Daily.—The first consignment of Italian queens has been sent out from the apiaries of the Wisconsin College of Agriculture to beekeepers in the State who had ordered them.

If the weather conditions are favorable it is expected that from half a dozen to 25 queens a day will shipped throughout the summer. The work has been made possible through the co-operation of the State Beekeepers' Association.—*Press Bulletin.*

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

A Beginner

I have been thinking of going into the bee business for some time, but every one discourages me. My husband does not say much one way or the other, and I am anxious for some good honest advice. It is necessary for me to do something to help, as my husband's health is poor. I cannot afford to spend the money for bees and bee supplies unless there is some prospect of getting something out of it.

We do not know anything about bees and would have to learn. Do you honestly think a woman without any experience can succeed in the bee business after a few years' trial? They say there is so much disease among bees nowadays that there is nothing to be made by an inexperienced person.

[Mrs.] Ida Gummons.

Fair Haven, N. Y.

Whether a woman—or a man either—who has at present no knowledge of beekeeping, can make a success of it, is a question very difficult to answer. Out of a hundred such women, taken at random, the likelihood is that by far the majority would do well to let beekeeping alone. Not every one has a liking for the business, and without such liking it is practically certain to be a failure. And until you actually make the trial there is no way to tell whether you like beekeeping or not.

Because you are a woman is a matter that hardly merits attention. With the same strength as a man, a woman should make just as good a beekeeper—perhaps better. And there are not a great many times when the average woman needs extra strength, and then she can get the help of a boy or a man.

The matter of diseases in bees is not so important as you might think. Many experienced beekeepers have as yet had no experience with a serious disease, such as foulbrood, and you can learn about it as well as they.

If your idea is to begin at once with enough bees to make a considerable part of your living, dismiss the thought. You're practically sure to fail. But if you think worth while to try it, begin with not more than two colonies, and if you succeed you can easily get more. If you fail, the loss is not heavy.

So you see the only way to learn whether you can be a successful beekeeper is to try it and see. But try it easy.

◆

Pollen from Dried Wood

Thanks for your suggestion about having the small frames made to order. I have been trying to plan a way of dividing a 10-frame hive into three parts and using that if I cannot get the small hives this year. I very successfully introduced the great number of two queens by what I called "Dr. Miller's Smoke Method," though I must admit I was rather generous in administering the smoke.

I consider myself a convert, though it is possible I might later strike such a slippery place that I would suffer a slide backward.

The other day I saw some of our bees packing their pollen-pockets full of the dust of rotten wood at our wood pile. We use cottonwood, and usually cut only dead trees or drift logs lodged on the sand-bars of the river, so there are often quite soft and rotten pieces. I suppose the fine dust left by wood borers would be particularly satisfactory to the bees, but the one I was watching was working on merely a punk stick of wood. There were a great many bees at the wood pile and they rather annoyed a man who was cutting there. The bees have also been working on some freshly cut green cottonwood trees that they are sawing up to haul away from the river bank where the river is cutting badly. They seem to be very resourceful little insects to make use of such unpromising materials for early supplies.

[Mrs.] R. L. Cheney.
Hardingrove S. Dak.

The smoke method of introducing queens should not be credited to Dr. Miller, but to Arthur C. Miller.

You are right about bees using unpromising material for pollen, and it almost looks as if they sometimes use unsuitable material, as when they use coal-dust.

◆

Paste for Labels

Mrs. C. A. Wurth, of Englewood, Calif., writes:

"Enclose find a recipe for paste that will stick your labels on tin honey containers, as we have used it for a number of years and found it all right:

"Two tablespoons of corn starch mixed in a half teacup of water. One half teaspoon of lye dissolved in a tablespoon of water, then stir the lye into the corn starch. This will make half a teacup of paste. Be sure and use enough lye so your paste will be clear and not milky looking."

John Kneser, of Hales Corners, Wis., gives another recipe:

"To make labels stick on tin use muriate acid (poison); it can be had from a drug store. A small size ½-pound bottle costs 25 cents. Apply with a cloth and one minute later you may apply the label. Try it and you will want nothing better. The labels will never come off unless they are scraped off. It may be well to use gloves on account of the poison; however, it is not necessary if one is careful.

"Gum tragacanth is also good, but more expensive. The acid destroys the grease on the tin. I have not seen this in print before. It is certainly of great value to me."

A common complaint is the difficulty of getting labels to stay on tin. We tried using common flour paste in putting labels on 5-pound pails. As soon as thoroughly dry the labels dropped off. The case was probably made worse by the fact that pretty heavy paper was used in the labels. We were in haste to use the labels, and in the emergency used light rubber bands to hold the labels on, one band near the top, the other near the bottom. They served better than one would be inclined to think.

The next labels we got we had printed on paper that reached clear around the pail and lapped over an inch or so. Of course, there was no trouble about the paste holding on the lap. The label was printed double, the same label showing on two sides of the pail. This is a little more expensive than the single label, but it looks a little better than to have the bare tin showing on one side.

Fred W. Muth says he has no trouble getting paste to stay on tin if he first scratches the surface of the tin; and that there is no need of the scratching if sugar is used in the paste.

J. P. Brumfield, a Kansas druggist, says: "I have never had any trouble, using almost any kind of paste for tin. Wet a rag with the paste, and rub surface of tin where label is to go until the surface is dry or nearly so, then paste label and apply, and it will stay. It seems to clean the greasy surface. Just common dextrine and hot water makes a good, cheap paste, and I know will stay when applied as above.'

We have tried this, and found it a success.

Mr. Brumfield sends also the following, clipped from a druggist's book:

FLOUR PASTE.

Flour (wheat).........	4 oz. (troy)
Water	16 fl. oz.
Nitric acid.............	1 fl. dr.
Oil of cloves...........	5 minims.
Boric acid..............	10 grains.

Thoroughly mix the flour, boric acid, and water, and strain the mixture through a sieve; add the nitric acid; apply heat, with constant stirring until the mixture has thickened; when nearly cold add the oil; strain it through coarse muslin if not perfectly smooth. This paste keeps well, and is much superior to tragacanth mucilage and ordinary paste. When it is required for pasting labels on tinned surfaces, the addition of 10 percent of glycerin will prevent the labels from falling off after drying.

◆

123 Pounds from One Colony

In Deutsche Imker, a German bee journal, under the heading "Unusual Honey Yield," it is reported that Miss Emily Lustinetz took from one colony 123 pounds of extracted honey. Some of the sisters in this country would hardly consider that remarkable. But, then, we can't get the prices they get in Germany.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
Dr. C. C. Miller, Marengo, Ill.
He does NOT answer bee-keeping questions by mail.

Building Up Nucleus With a Frame of Brood

1. About the middle of May I took from a strong colony a frame of brood in different stages with bees attached and put it on the old stand, moving the old hive somewhat aside, thinking that this nucleus would rear a queen and develop into a good colony. They worked for a few days, carried in honey but no pollen, nor did they start any queen-cells. So I gave them a sealed queen-cell. The next day I found this queen-cell lying on the floor. I put it back on the frame, but when I opened the hive again the same day, the bees were gone.

Now, what could have been the reason that these bees did not rear a queen, as there were eggs and plenty of brood and a good honey flow?

2. Why did they tear down the queen-cell I put in and finally leave their brood?

3. Is there any feasible way to build up a new colony with a frame of brood and bees without giving them a queen at the start?

Pennsylvania.

Answers.—1 I don't know for sure, but I suspect that the trouble was in moving the old hive "somewhat aside," leaving it so near that the bees could too easily find their old home.

2. I suspect you didn't properly fasten the queen-cell, for if it had been sufficiently fastened the bees would not have torn it down, even if they tore it open. Like enough they left the brood; as I have said, their old home was so near that they found it.

3. Yes, it may be done with a queen-cell, or even with young brood. If you will try it again, and move the old hive farther away than the nearest neighboring hive, or a rod away in case there is no neighboring hive, you will likely succeed.

Late Requeening—Wintering

1 When requeening is done as late as may be in accordance for best all-around results, what prospect is there that the colony concerned will not swarm in the year following?

2. Please state the latest time requeening should be done?

3. On page 208 of the June American Bee Journal last, in center column, you answer a question about controlling swarms in an apiary run for comb honey. At the end you say "the foregoing to be the best for an out-apiary." Now, which of these is the best for a home-apiary, or please name them in the order of preference for the latter?

4. Previous to this last winter, I seemed to have good results in wintering single-walled hive colonies, by just dumping a box over them two to three inches all around, no packing, overlapping back and sides of bot-

tom-board and full half exposure to the South. This last winter did not show up well; there was considerable evidence of mice having gotten in between the outside of the hive and inner side of box or boxes. Mice or any such animal could not get inside of the hive, the back of the latter being all closed, and the entrances being provided with grating. The queer thing was that all such colonies at first examination had queens, and almost all of them had ample stores left, but number of bees rather small. Do you see any way mice, etc., might have gotten at the bees, or how can you account for the low state of the colonies?
PENNSYLVANIA.

ANSWERS.—1. So many factors enter into the problem that a definite answer can hardly be given. The difference in bees, seasons, and management have special bearing. Speaking in very general terms—and at that only a guess—I should say that with such a queen the prospect for no swarming might be three times as good as with a queen three months to a year older. But I would guess that the prospect would be five times better still with a queen of the current year's rearing.

2. That would depend upon the season. A good queen could be reared from an egg laid eight days before the close of the honey flow, provided that conditions would still allow the flight of drones until the queen was a week old.

3. I didn't mean that the plans mentioned were the best for an outapiary, and that some other might be better for a home-apiary. What I meant was, that the plans were given for a homeapiary, and "I don't know of any better way......in an outapiary." As to preference, I gave that when saying, "More likely than any other way, the dequeening treatment will be used." and II may here add, especially if a queen can be given that has lately begun laying. As to the order of preference of the others, it would be hard to say: "Circumstances alter cases'" But it's all the same for home-apiary and outapiary.

4. If there was no chance for the mice to get inside the hive itself, I don't see how they could do any harm by being between the hive-walls and the outside box, unless it be by their jarring and noise. One would hardly think that would amount to much.

Uniting by the Newspaper Plan

1. When uniting colonies by the newspaper plan, how long should I leave the new swarm separate, if I leave it for the bees to kill the queen?
2. How long should I let the paper remain in the hive?
3. Do bees winter better in double-walled or single-walled hives? PENNSYLVANIA.

ANSWERS.—1. It doesn't matter greatly; you may leave them for weeks untouched, but it is generally better to get the brood-combs all together in one story as soon as the bees have united, say in three to six days.

2. You may leave it for the bees to clean out at their convenience, but it is better to take it away when you put the brood all in one story.

3. Some have better success with double walls, and some with single.

A Beginner

1. Is a hive with ten Hoffman frames large enough for the average queen?
2. Why do they make the Hoffman frame so shallow?
3. In clipping queens' wings how much of the wing do you clip?
4. If you only clip one wing is that enough to prevent her from going with a swarm?
5. Does a man make anything by using foundation in full sheets, or is it just an advertising scheme to get you to buy lots of foundation?
6. They say it takes 10 pounds of honey to make one pound of wax, and the way it is made it is only about one-third wax. That way a pound of wax would go quite a ways. If that is true, I believe a person does not save anything by using full sheets of foundation?
7. Do bees need salt?
8. Do bees fill all their frames with brood in the spring, or it being cold and no honey coming in, has it anything to do with brood-rearing?
9. Does every frame in a hive have to be filled with brood before they swarm?
10. Do the field bees ever change with the bees that work in the hive, and can the bees in the hive gather honey and pollen?
MINNESOTA.

ANSWERS.—1. That isn't easy to say; but I suspect that in the height of the laying season the average queen would use more room if she had it.

2. Perhaps the greatest reason is because it allows a larger surface on top than would a deeper frame.

3. All that can conveniently be clipped of the two wings on one side, say half or more.

4. Plenty.

5. Figure it out for yourself. You can get along with so little foundation that you can practically save the cost of it, say 80 cents per colony. Then you will have drone cells in about a fifth of your combs. That means a fourth more worker-cells in your combs built upon full sheets of foundation, a fourth more workers raised, and a fourth more honey produced. If the colony without foundation yields you \$3.20, the one with foundation should yield a fourth more, and a fourth of \$3.20 is 80 cents. So it just comes out even, doesn't it? You have saved 80 cents on foundation and lost 80 cents on honey. But that is not the end of it. Those combs ought to be good for 30 years or more, but say 25. If you lose 80 cents every year for 25 years, it will make \$20 in all. So your saving of 80 cents has cost you a loss of \$20, making you \$19.20 out of the whole dicker. Then something more should be added for the rearing and feeding of the extra drones. But I don't want to be hard on you; a loss of \$19.20 is bad enough.

I want to save all I can, and I have always felt I couldn't afford to do with less than full sheets.

6. I don't know whether it takes more or less than 10 pounds of honey for a pound of wax, and you are away off if you think there is anything but pure wax in a new comb (you may get less than a third of wax from old comb, but that's nothing to the point), but I didn't figure anything for the cost of the wax, and in any case more wax must be used if there is no foundation, so the only difference is to add something more to that \$19.20, if you insist upon it.

7. I don't know; but from the way I've seen them about a salt barrel I suspect they do.

8. Yes, the cold lessens brood-rearing, and if no honey comes in for a sufficiently long time it will stop brood-rearing altogether.

9. Not necessarily; but when a swarm issues you will generally find all the cells in the brood-chamber filled with brood or stores.

10. In a pinch field-bees may do house work, and it's the regular thing for nurse-bees to become field bees, but I don't believe there's ever a swap, field-bees becoming nurse-bees so that nurses can take the places of the field-bees. In other words, I don't believe field-bees ever become nurse-bees so long as there are plenty of young bees in the hive.

11. Yes.

Facts About Alfalfa Honey

I am writing a few facts about alfalfa honey suggested by Dr. Miller's reply to a question in American Bee Journal. In Colorado we produced both comb and extracted honey, and it frequently granulated in the combs, but one spring a neighbor brought us about 100 supers of comb honey that had been kept in the loft of a barn covered with hay all winter. There was not a granulation in the lot. This was largely alfalfa honey, with more or less sweet clover honey mixed in.

In our first season here in Montana our comb honey showed granulation in October, but since then we have had it keep in good condition all winter. One store has five cases left as clear as when gathered. We had half a case not sold; it stood in the shop where there was no fire all winter, and the temperature was down to about 60 degrees Fahr. below, and to 30 degrees below zero several times, and for a month zero weather was considered a "warm spell." I doubt if it was much warmer inside than out. Yet today the honey does not show any granulation. It is alfalfa honey mostly, with some sweet clover, no doubt.

Our extracted honey usually granulates quite early, but when speaking of comb honey I doubt if alfalfa honey will granulate any sooner than white clover, under same conditions.

I do not know why alfalfa honey should have such a bad reputation, but probably the weather conditions have much to do with its keeping liquid.

I always read answers to questions in American Bee Journal and other places with much profit, even if once in a while Dr. Miller says "I don't know." MONTANA.

ANSWER.—This is very interesting, but leaves one wondering why in the same climate alfalfa honey should sometimes granulate in October, when no self-respecting clover honey would ever think of granulating, and at other times remain liquid through a winter so cold that ordinary white-clover honey would make no attempt to keep liquid.

Width of Entrance—Crosses—Small Swarm, Etc.

1. What do you think of a ½-inch entrance in an 8-frame hive?
2. Are the crosses of Italian and black bees any good as honey gatherers?
3. Today, June 4, I hived a small swarm with a hatfull of bees in it. Do you think they will make a strong colony by autumn and store enough for winter?
4. Did you ever use a Parker foundation fastener? I got one but it was not good.
5. I see no bees working on white clover. Do you think there is any nectar?
6. Does it cost more to produce comb honey than extracted? IOWA.

ANSWERS.—1. In winter, outdoors, it's too large; in summer, too small.

2. Yes, the first cross may be as good gatherers as pure Italians, but after that they are likely to deteriorate.

3. If the season is good, yes.

4. Years ago I used one and made quite good work with it.

5. There may, and there may not be. You can tell better later in the season. You will see very few bees on clover where it is plenty and not many colonies of bees.

6. Oh, my! Yes.

Miscellaneous Questions

1. It is recommended when bees swarm to set the new colony on the old stand, moving the old hive back first on one side then on the other, so that most of the flying bees will go with the new colony. If one does not wish to increase, would it not be better to shake most of the bees from the old frames in front of the new colony, giving the brood to weaker colonies, thus finishing the job at once?
2. When a colony has died and many of the workers are in the cells, will the bees remove them if placed in or over a strong colony?
3. When there are patches of white mold on comb from which bees have died, will bees remove this if placed over or in a strong colony?
4. When a queen is removed from the hive for any purpose such as the curing of European foulbrood, and it is desired to return her later, should she be caged in her own hive or some other, or put in a nucleus?
5. Are the coiled wire cages similar to

queen-cell protectors all right, or should the Miller cage or some other be used?

6. Should she be caged alone or should some bees be caged with her, and if so how many?

7. How long can she be safely kept in the cage?

8. In rearing queens is it necessary to have a nucleus ready to receive each queen as she hatches unless she is to be immediately introduced to a queenless colony? If not, how is she handled?

9. If queen-cell protectors are used with wire-cages attached as illustrated on page 459 of "A B C and X Y Z of Bee Culture," and described on top of next page, how soon after hatching should queens be removed? INDIANA.

ANSWERS.—1. Yes, and it may be still better to shake off *all* the bees, provided the weaker colonies are strong enough to take care of the brood if no bees are added.

R. B. GRAVES WITH A SWARM, OF SPRINGFIELD, KY.

2. Yes; but you may help the bees if you dry the combs thoroughly and then, holding each comb horizontally, knock the top-bar hard against some solid substance. It may ar out many of the dead bees.

3. Yes; and it may be still better to put such combs *under* a strong colony.

4. Either way; but generally it will be better to cage her in her own colony.

5. Either will do, but it is better to have a cage large enough so a queen can move about in it freely.

6. Alone.

7. A week or two; perhaps longer.

8. A virgin just emerged from her cell may be given to a queenless colony or nucleus. It may be more convenient not to wait for the emerging of the virgin, but to give a ripe cell. Often, however, it is a great convenience to be able to keep a number of virgins a few days until places are ready for them, and for this purpose a queen nursery may be used. The one I like best is the Miller nursery described in my book, "Fifty Years Among the Bees."

9. They may be left several days, if necessary, but the sooner they are relieved from their imprisonment the better.

Diseased Brood

1. I have found some dead brood, and I would like to get your idea of what might cause it. I have read the American Bee Journal for several years and lots of other books on foulbrood, and this looks more like pickled brood than anything else. About a month ago I found some dead brood; very few cells died just before it was ready to seal. A few cells had been sealed, and I still find a little of it yet. None of it dies in the coil as they do in European foulbrood, and it has no ropiness, but is watery.

2. Please state whether or not European foulbrood visited you in 1914 or not. MISSOURI.

ANSWERS.—1. Like enough it's pickled brood, but instead of taking my guess about it send to Dr. E. F. Phillips, United States Department of Agriculture, Washington, D. C., and he will send you a box in which to send a sample, and then he will tell you what is the trouble, and what to do, without charge.

2. Yes, I published that I had some cases in 1914.

Feeding Extracted Honey in Winter

1. In feeding in winter extracted honey to bees, how much water should I put in the honey? My honey is very thick.

2. If I put the feeder over the frames, and put a shallow super over the feeder will it not be too cold for the bees as I winter them outdoors in single hives? The thermometer goes sometimes as low as 35 degrees above. I have been wintering them outdoors successfully so far, but never fed them over the *frames*.

One colony out on the ranch gave me 200 pounds of honey, half comb and half extracted. CALIFORNIA

ANSWERS.—1. So far as my knowledge of the matter goes, I wouldn't add any water, no matter how thick the honey.

2. It would have to be a good deal warmer than 35 degrees above for the bees to go up and feed. But probably you don't often go very long without a temperature of 50 degrees or more.

Beestings

I have been handling bees for the past two years and have been stung several times, but it never seems to affect me very much; in fact, I have been stung five or six times at one time and never gave it a second thought. On the 14th of last month I undertook to look at my bees and one bee stung me in the face just under my eye. In less than five minutes I was deathly sick, and my entire body broke out in a terrible rash, or seemingly welts. Please tell me why one sting would make me so sick and leave my head as large as a bushel basket at this time where before they never seem to bother me in the least. I would like to know what to do in case I am stung in this way again. NEBRASKA.

R. B. GRAVES IN HIS APIARY AT SPRINGFIELD, KY.

ANSWER.—I might explain that one's physical condition makes a difference in the effect of stings, or being stung in a particular spot, but the fact is I don't know a thing about it. Once in a great while such a thing occurs, and I know of no accounting for it. It may never happen to you again, and yet I should be more afraid of it than if it had not already happened.

Packing in a sheet wrung out of cold water has been recommended as treatment, yet possibly one might recover as soon without it.

Requeening

I have one colony headed by a remarkable good queen and several whose queens are not as good. I am a business man with little time that I can give to the bees except after 4:30 p.m. Will you kindly advise me as to the best way to get all my colonies headed by a daughter of a good queen. OHIO.

ANSWER.—I will give you one way that may suit your case. Let us say your best queen is on stand No. 1. Take from No. 1 about half its brood with queen and adhering bees, and put them in an empty hive on a new stand, say No. 8. Although not absolutely necessary, it may be well to alternate the brood left in No. 1 with empty combs, or at least with frames containing no brood—it will be likely to give you more queen-cells, likely one or more on each frame. If any frame happens to contain no cell, staple upon it one that you cut from one of the other frames. Now you can make a nucleus for each frame in No. 1. Put it in an empty hive on a new stand, and put with it a frame, or better two frames of brood with adhering bees taken from some other colony or colonies. Plug the entrance tightly with green grass or leaves, so that when the bees dig their way out they will stay. Then when the queen in the nucleus is laying, you can use her wherever you like, or you can give nucleus and all to a colony that has been queenless two or three days.

Number 8 can be strengthened with sealed brood from other colonies, and the process repeated. If you don't care to repeat it, then you will do well, instead of dividing No. 1 into two equal parts, to take only two frames of brood and bees with the queen, in the first place, to put in No 8.

If you have extra queen-cells, you can make additional nuclei for them if you wish. A week after making No. 1 queenless count the cells started in it, and if you find you will need extra nuclei, start them at that time, so they will be ready to accept cells three days later. [Do not close the colonies or nuclei if the weather is very hot. Put them in the cellar a day or two instead.—Editor.]

Bottling Honey

Are drugs used in bottling extracted honey, or do they use the heating process to keep it from granulating? Missouri.

Answer.—I know of no one who puts into bottled honey anything but pure honey. Some heat the honey to 130 to 160 degrees. I'll tell you the way I do in selling a small quantity of extracted honey in my home market. It is put in 5-pound pails, each pail bearing a label that says the honey will candy or granulate, and instructions are given for reliquefying. When the consumer buys a pail at the grocery he knows what to expect, and I've never heard a word of complaint Nothing original about it; I am only following the track of hundreds of others.

Setling of Swarms

1. Why is it that bees of a swarm after being hived do not do much outdoor work the first day?

2. I had a swarm issue from a hive and alight and cluster on two separate branches of the same tree. Why is it that they did this way?

3. Will the old bees of a swarm ever go back to the old stand after being hived on a new stand?

4. Is it advisable to use shallow extracting frames for comb honey? Ohio.

Answers.—1. The first thing needed in the new home of a swarm is an outfit of combs. In preparation for this the bees have loaded up with honey, a good many bees hang idly, secreting wax, there is work to do fitting up the new home, and this should account for less bees afield.

2. I don't know why. Quite often they do so. Let me ask you in turn, why do the bees of a swarm generally settle in a single cluster? It will not do to say that it is because the bees want to settle where the queen is, for I have seen many a swarm settle in a cluster when their clipped queen was not with them. Generally however, such a swarm returns without settling.

3. I don't know that any bee, old or young, that issues with a swarm, ever deserts the swarm, but it is possible that there may be exceptions.

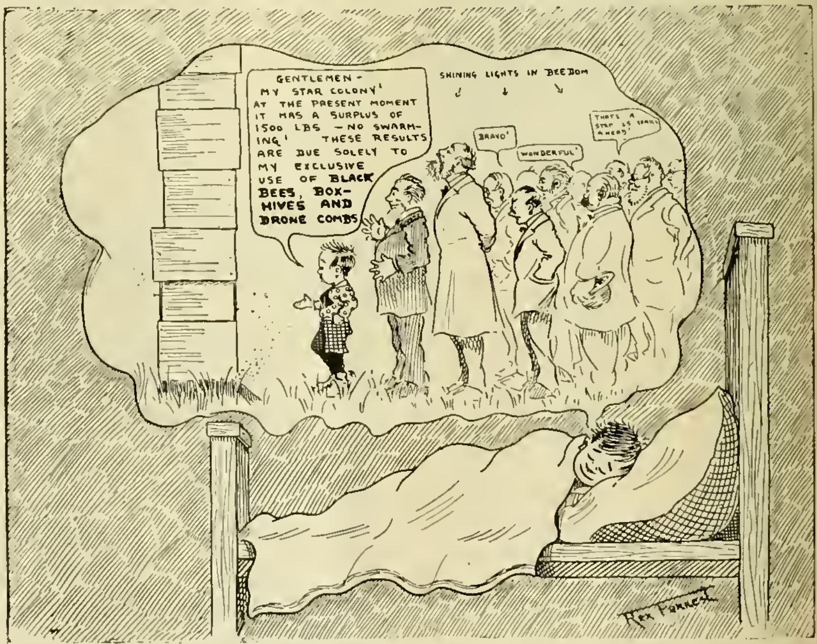
4. It may be, in some cases, for a home market; and is always advisable for bulk honey, that is where combs are cut out, put in a container, and the container then filled up with extracted honey.

Ants

1. About a week ago I caught a swarm of bees. Now the hive is full of black ants and eggs. What can I do to keep the ants out of the hive? 2 Can I move the bees to the house before fall? Illinois.

Answers.—1. It is not likely that ants will do a great deal of harm in your region, the bees being able to take care of themselves; although in some parts of the South they are very destructive. If you can trace the ants to their nest you can punch a hole in it with a crowbar, pour into it half a pint or more of kerosene and plug up the hole with dirt. If the nest be very large it may be well to make several holes.

2. At so short a distance as ¼-mile it will not be well to bring the bees home until they have ceased daily flights in the fall, unless you take the precaution to leave in the place of the hive another hive in which is an empty comb. Many of the field-bees will return and be found on this comb in the evening of the second or third day, when you can shake them in front of the hive at your home. After you have repeated this a very few times the bees will stay where you want them.


GENTLEMEN - MY STAR COLONY! AT THE PRESENT MOMENT IT HAS A SURPLUS OF 1500 LBS - NO SWARMING! THESE RESULTS ARE DUE SOLELY TO MY EXCLUSIVE USE OF BLACK BEES, BOX-HIVES AND DRONE COMBS
SHINING LIGHTS IN BEEDOM
BRAVO!
WONDERFUL!
THAT'S A STEP 25 YEARS AHEAD!
REX FORREST

MY FIRST BEE DREAM

Swarming

1. I had all queens clipped, and when they swarmed I expected to catch the queen in front of the hive. In putting them in a hive I found a young queen. What had they done with the old queen? I have had several that way. They did not swarm out, as I have been here to look after them and nothing grows on the land where a queen could get lost. Have only had a few days favorable for them to swarm, as the weather has been cold and backward.

2. I have one swarm that was working in the super in May with lots of brood I looked at them in June and found no queen and no brood. Why did they not rear another queen?

3. One swarm came out June 11. The 14th it swarmed again, and as I couldn't find a queen I ran them back. They came out again in the afternoon with a queen, so I kept them in a hive until morning and put them back. Now they stay. Why did they swarm?

4. I had one swarm come out and return. They came out the next morning I placed an empty hive on the old stand. When they returned they would not go into the new hive, but went into two other hives near, so I placed the old hive back, and now the most of them are at home. They had several queen-cells.

Why did they persist in swarming with no queen, or would she not come out because her wings were clipped? There were no eggs in the comb. They stay now and are working in the super. British Columbia.

Answers.—1. If from any cause the old queen does not issue with a prime swarm at the proper time, she is put out of the way and a young queen is allowed to take her place. In this case the weather was probably so bad that there was no chance for swarming until time for the old queen to be put out of the way.

2. They may have reared a young queen which may have been lost on her wedding flight.

3. Bees sometimes swarm out with a queen on her wedding flight, and when the first flight is not successful it will be repeated. More likely, however, a plurality of virgins were in the hive, all but one in their cells and when the first one came out with the swarm and you hived the swarm, a second virgin was liberated from its cell. The two virgins had a fight to the finish, and the victor then issued with a swarm, which you hived separately. Then during the night, the old colony being reduced, the bees gave up thought of further swarming, allowing the free virgin to kill the others in their cells, or else all were allowed to emerge from their cells and fight it out until only one was left. Then when you returned the swarm next morning, the two virgins had their bout, and the incident was considered closed.

4. The clipping of the wings had nothing to do in preventing the queen from issuing with a swarm, for a clipped queen comes out with a swarm the same as any other, only she cannot go off with the swarm. The likelihood is that when the swarm issued the first time the queen returned with them, but was lost the second time, and the bees would not stay in an empty hive without a queen, but were willing to accept the old hive when given to them.

Miscellaneous Questions

1. On page 136 of the American Bee Journal for 1916, you said that with the use of entrance guards to prevent swarming, when a colony does swarm and possibly unites with another swarm, after a time there will be only a young queen in the hive. Now what has become of the old queen if she could not leave the hive? Do the bees destroy her?

2. Can bees store as much honey in worker comb as in drone or surplus comb?

3 Do bees sleep any at night or any other time except in winter?

4. What are bur-combs?

5. I have read a lot about honey being so

healthful, but have never read anything about honey-comb. Is it easily digested if at all?

6. When bees start queen-cells preparatory to swarming, if these and all subsequent cells are destroyed will this not prevent swarming at least to a great extent?

GEORGIA.

ANSWERS.—1. Yes, the bees probably ball and kill her, or else the first virgin emerging is allowed to kill her.

2. I am not entirely sure; the difference, if any, is hardly worth considering.

3. I suppose they sleep in summer as well as in winter, but don't know much about it.

4. Bur combs are the bits of wax that bees put between top-bars and elsewhere aside from the regular combs.

5. I think the wax is utterly indigestible. That does not say there is anything unwholesome about it. A large part of the food of animals, man included, is needed merely for its bulk, and is not digested at all. A bill of fare containing nothing but that which is entirely digestible would not be conducive to the best health.

6. The first time you kill the cells of a colony preparing to swarm, it will certainly delay swarming, at least a few days. In some cases you may continue killing cells every week or 10 days throughout the season, and there will be no swarming. Generally, however, the bees will swarm sooner or later, in spite of you.

Poor Wintering—Damp Cellar

1. Some of my bees are short in winter stores. How would it do instead of giving it to them to go into the cellar about January, take off the cover and set on a super with about 10 pounds of good capped honey.

2 Would it be best to put on an excluder or would the queen go up into the super? How would it do to put an inner cover on top of the excluder and let the bees feed up through the hole left for the bees to escape?

3. My celler is very damp, and the water always runs out of the hives in winter. Is there any way to prevent this?

WISCONSIN.

ANSWERS.—1. It might work, but I'm afraid it would not do so well as to have the honey sealed in the combs in the brood-chamber in the first place. If you try it, I would advise that it be not on a large scale.

2. There is danger that the bees would not go up unless it should be too warm in the cellar for good wintering, and if they should all go up it would mean death to the queen to be left below the excluder.

3. I don't know of any easy way to dry out a damp cellar except by having a fire or hot stones or bottles in it. Lime might do some good. But moisture in a cellar is not likely to do great harm if the cellar is warm enough. Indeed, there are reports of fine wintering with water running through the cellar.

REPORTS AND EXPERIENCES

Influence of Nurse Bees

I note with interest the speculations as to nurse bees from cross colonies being able to transmit their cross traits to progeny which they may be nursing.

In my opinion there is nothing in it, for as long as I can remember I have caught stray swarms, or bought them when it would keep bees out of the hands of those who knew nothing of them and would not take care of them. To bring them home would be to expose young bees mating to undesirable drones whose history I knew nothing of. So I have found it expedient to destroy their queens and use the colonies either as starters or builders of cells in my queen operations. The fact that I have never noticed transmission of those cross traits from such blacks would indicate that there is nothing in the theory. K. HAWKINS.

Plainfield, Ill.

Handling Comb and Extracted Honey

For five years I have been handling my honey consumers' combs that were not quite all capped over, "put up in extracted honey," something like sardines are put up in olive oil. The combs stand on edge with little bayous of liquid honey between. It makes a very appetizing looking dish. The cans are scalded, corners paraffined, and a can 4x5x7½ inches, weighing 7 pounds brings $1 00. Twenty-two of these slipped out of a store in four days.

It is very embarrassing to me, at my age, not to be able to handle an apiary large enough to supply my home demand.

Fraser, Idaho. F. F. GEORGE.

Kerosene Tin Uncapping Cans

The word "uncapping" as applied to the fixture may be incorrect, as you, Mr. Editor, say on page 47, February number, but I guess it will stick to it all the same.

With regard to the kerosene tin uncapping can, I had one of these when I first started in the game, but I threw it away because its capacity was too small, after I became the proud possessor of a dozen hives, and as to having many of these fixtures kicking around; well, I should consider I was something of a sucker if I did. What on earth would be the good of this anyway if you are uncapping say 200 combs an hour? Why, one would be choked every few minutes. Not only that, but the opening at the top is too small to allow the cappings to fall in freely enough.

I do not use the Dadant can, but I use tubs on the same principle, and I took the idea from the Dadant can. The tub I use holds all the cappings from 200 to 400 combs, depending on the amount of cappings on the combs. When full, it is pushed along the bench and another put in its place.

The tub underneath has a tap in, and the honey is drawn off and the cappings allowed to drain indefinitely. Those tubs full of cappings can be piled one on top of another up to the roof and take up very little room in the building, and when not in use they are piled away outside, as one fits right inside the other. For this reason they are handy to cart about from one farm to another.

The kerosene tin arrangement is of no use to me. MAJOR SHALLARD.

Glenbrook, Australia.

European Foulbrood Again

The following private letter from an experienced apiarist will prove valuable to our readers:

"I have great faith now in Dr. Miller's treatment for European foulbrood. I do not intend to destroy any more good worker-combs when it is at all convenient to save them.

"Last July, early in the month, I caged a queen in one of my outapiaries. It so happened that I did not visit that apiary again until late in the fall, and I had forgotten all about the caged queen. It was late in September or early in October, 11 weeks later, that I went there thinking to take home that diseased colony, wishing to have it where I could keep an eye on it. I opened up the hive to see how things were. To my surprise I found no brood at all, though brood-rearing seldom ends here until well into October. But there was a good lot of honey and the combs showed no sign of disease. I pulled one full frame out for a look and noticed a cage in the bottom. Said I to myself, what's that queen-cage there for? Then it flashed over me that I had caged the queen back in the summer-time

"Well, Dr. Miller, the queen was alive though all her attendants were dead. There were still about 8000 bees in the hive, so I let out the queen, took up the hive and set it in my home-yard. Today there are two patches of healthy brood and enough bees to pull through. The colony really needs some help to make it build up rapidly, but for the test I shall refrain from any assistance so long as I think the colony will be able to get into shape in time. I shall soon requeen for the queen is not a good one.

No, I do not recommend such a long period of caging, but will bear testimony that it serves to get the combs well cleaned of disease.

"I tried a doubtful experiment last summer. I have some colonies at my brother's place in Lancaster, Mass., and last summer, early in July, I went there to treat them for foulbrood. It was before I realized that colonies should be very strong to warrant success in the caged-queen treatment. These were very strong, and I drove fair-sized swarms from four of them to bring back here with me. I gave caged queens so shut in that the bees could not liberate them, leaving them to my brother to liberate after the lapse of a week or so Even with this poor treatment, so far as I know' only one of the colonies is now diseased.

"The four swarms were brought to Norwich, some 80 miles, in my auto As my auto is an old one-cylinder Cadillac, they got well shaken on the trip. At any rate, I did not wait the regulation four days before hiving them on chambers of brood. It was just at the opening of the sumac flow and I wanted those bees to store a super of honey per swarm. I hived them on shallow frames of brood (for I have a few colonies with divisible brood-chambers, and I like to cut down to one body when the flow begins). I fully expected that they would all be diseased, but intended to treat them after the flow *Not one of those four swarms gave the disease to the brood with which they were furnished.* Honestly, Dr Miller, would not 99 percent of all experts assert that a swarm shaken from diseased combs and hived in less than three days upon combs of brood of all ages transmit the disease to the new brood?

"Yet I do not advise this as a practice."

Norwichtown, Conn. ALLAN LATHAM.

Same Disease Again

I see Mr. J. E. Pleasants, inspector of Orange Co., Calif., has apparently the same bee disease to contend with that I had ten or more years ago. If he will requeen and at the same time move every diseased colony out of bee-range to a new yard I think he will cure it. I moved colonies out only two or three times, and it has never come back. It not only stopped it at the home-yard but it cured those I moved.

Requeening in the home-yard will do no good, at least it did not for me. It may be a kind of bee paralysis, but it is not the kind we are all used to We lost several colonies entirely, and many lost nearly their entire field force; some lost nearly all their brood.

At the time, I had a talk with O. O. Poppleton. He seemed to think it was not the kind of paralysis he was used to. I think there is something in rousing them up and moving that helps them. Colonies that do not have it bad need not be requeened.

Marceline, Mo. IRVING E. LONG.

Encourage the Use of Honey

DEAR EDITOR:—I am enclosing a clipping from our local paper. One of the ladies' clubs here known as "The Housekeepers," decided that they would have a Bee and Honey Day, and insisted on my helping them with their program. I had just received your pamphlet "Facts About Honey," and considering it very good material, gave it to a member who read it at the meeting.

Each member responded with a short article on bees and honey, and some gave demonstrations in baking cakes, cookies, etc., with honey.

This was my first experience as "Bureau of Information on Bees and Honey" at a ladies' club, but I enjoyed it very much and thought the ladies did well, and the demonstrations were interesting and instructive. You never tasted anything better than these honey cakes and cookies.

When it was too late I concluded that the ice cream should have been made with honey, and instead of mints or candies the ladies might have served some white clover candied honey cut in small cubes

Another thing also occurred to me: If they ever have another such program, should it be in the honey season, I could have some bees and honey there; take the honey from them, extract, and give the bees the combs again. I believe it would be an inducement for more people to eat extracted honey, and why wouldn't this kind of a program be a good thing for lots of other clubs to take up? It would be a change and not only interesting but instructive, for there are lots of housewifes that do not realize the food value of honey.

Lots of manufacturers of food stuffs have a national day for their product, why not have one day of the year for a "honey day?"

Wenona, Ill. A. Coppin.

Summer Field Meet in Tennessee.—Tennessee beekeepers will hold summer field meetings as follows:

August 9—Nashville, at the home of Mrs. Grace Allen, 4409 Charlotte Ave.

August 10—Hollow Rock, at the apiary of L. E. Smith, Memphis.

August 11—At the Tri-State Fairgrounds. Meetings to begin at 10 a.m.

Short talks will be given by Dr. E. F. Phillips, Frank C. Pellett, E. R. Root, Dr. J. S. Ward, J. M. Buchanan, Ben G. Davis, and others.

Classified Department

(Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

Finest Italian Queens. Send for booklet.
Jay Smith, 1159 DeWolfe St., Vincennes, Ind.

Phelps' Golden Italian Queens will please you.

Golden Queens for sale, 55 cents.
A D. Keene, Bunkie, La.

Fine three-banded Italian queens. Circular and price list free.
J. L. Leath,
Corinth, Miss.

Rhode Island northern-bred Ital. queens' $1.00. Circular. O. E. Tulip, Arlington, R. I'

Tell several thousand people what you have for sale with a few words in this department.

For Sale—Untested Golden Italian queens 60c each J. F. Michael, Winchester, Ind.

Doolittle & Clark's untested queens $1.00 each; $5.00 for 6; per dozen, $9 00.
Marietta, N. Y.

Bees and Queens from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

Golden all-over queens of quality. Untested, 75c. Tested, $1.50.
A. O Heinzel, Rt. 3, Lincoln, Ill.

Bees for Sale—50 strong colonies in 10-frame hives. Stock from best breeders.
Write S. E. Ackerley, Grand River, Iowa.

Ready now 1-lb. 3-band Italian bees with queen, $1.65. 2-fr. nuclei with queen, $2.25. Rosedale Apiaries.
J. B. Marshall,
Big Bend, La.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens.
John W. Pharr,
Berclair, Tex.

Golden Italian Queens, no better honey gatherers anywhere at any price. Untested, $1 00. Tested, $1 50.
Wallace R Beaver,
Lincoln, Ill.

For Sale—Bright Italian queens at 55c each, or $6.00 per dozen. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

Three-Banded Italian queens. Prices: One, 75c; 12 for $8 00. Tested, $1 25 each. Write for prices on nuclei and full colonies.
J. F. Diemer, Liberty, Mo.

For Sale—200 strong colonies with extracting equipment. Unlimited range, continuous honey flow. No disease
J. O. Hallman, Unadilla, Ga.

Italian Queens that produce hustlers. Nothing but select queens sent out Untested, $1 00; $9.00 per dozen.
A. E. Crandall & Son, Berlin, Conn.

Bright Italian Queens at 60c each; $6.00 per doz; $50 per 100. Safe arrival and satisfaction guaranteed.
W. W. Talley,
Rt 4, Greenville, Ala.

Phelps' Golden Italian Bees are hustlers

Vigorous prolific Italian queens, $1 00; 6, $5 00. My circular gives best methods of introducing.
A. V. Small,
2302 Agency Road, St. Joseph, Mo.

Golden Italian queens, select tested, $1 25. Tested $1.00. Untested, 60c; 12, $.700. Select untested, 70c; 12, $8.00. No foulbrood.
D. T. Gaster, Rt. 2, Randleman, N. C.

Leather Colored "Nutmeg strain" of queens, $1.00; doz., $10. Tested, $1 50. Special price on large lots. Return mail.
A. W. Yates, 3 Chapman St, Hartford, Conn.

Golden and three-banded queens. Choice untested queens at 50c; 100 for $40. Dr. Miller's strain. Untested, 75c; 25 or more at 60c.
The Stover Apiaries, Mayhew, Miss.

A Little Ad in our classified columns will sell that perfectly good equipment that you no longer need, Only 15 cents per line each insertion.

For Sale—50 colonies of bees and fixtures; equipped for section honey. Or will let them out on shares to party with good location. Address, E. B Milton, Greggs, Ga.

"Queens of Quality" reared from a daughter of one of Dr. Miller's famous queens, $1.00 each by return mail. After July 1st, 75c each; $8 00 per doz.
J. Ivan Banks, Dowelltown, Tenn.

For Sale—500 colonies of bees; 200 colonies operated for comb honey. Apiaries are located in the famous Snake River Valley.
Gem State Apiaries.
Box 67, Rigby, Idaho.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

Choice Italian, Carniolan or Caucasian queens, Untested, 75c. Tested, $1.25 Breeding queens, $2.50. Virgins, 40c each; 3 for $1.00. C. W. Finch, 1451 Ogden Ave., Chicago, Ill.
Phone Haymarket 3384.

Quirin's superior northern-bred Italian bees and queens are hardy, and will please you. More than 20 years a breeder. Orders booked now. Free circular. Honeydew for bee food, 5c a lb. H. G. Quirin, Bellevue, O.

For Sale—Medium brood foundation, one to ten lbs, 52c per lb. Up to 25 lbs, 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana. Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade.
J. F. Archdekin, Bordlonville, La.

Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

For Sale—Good Italian queens, untested 75c; tested, $1.00; nuclei, 2-frame, $3 00; 1-lb. package, $2.00; 2-lb. package, $3 00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1904 Park Ave., Little Rock, Ark.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

Golden Italian Queens by June 1st. Untested, 75c or $4.00 per half doz.; $8.00 doz. Select untested, $1.00. Tested, $1.25 each or $7.00 per half doz.; $12 a doz. Breeders, $3 00 to $5.00 each. Purely mated guaranteed. Send for circular.
J. I. Danielson,
Rt. No. 7, Fairfield, Iowa.

Carniolan, golden, and 3-banded Italian queens. Tested, $1.00. Untested, 75c; 6, $4.20; 12, $7.80. ½-lb. bees, 75c; 1-lb. $1.25. Nuclei, per frame, $1 25. No disease; everything guaranteed. Write for price list.
C. B. Bankston, Buffalo, Leon Co, Tex

An established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1 00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

Golden Italian Queens bred strictly for business that produce a strong race of bees as honey gatherers. Untested 75c each; 6 for $4.25; 12, $8 00. Safe arrival, prompt delivery, and satisfaction guaranteed.
L. J. Dunn, Box 338, J. R.R. 6, San Jose, Calif.

Gray Caucasians—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00.
H. W. Fulmer,
Box 10, Andalusia, Pa.

Queens, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed.
H. C. Clemons,
Rt. 3, Williamstown, Ky.

For Sale—Three-banded Italian queens and bees from the best honey-gathering strains obtainable. Untested queen, 75c; 6, $4 25; 12, $8 00 Tested queens, $1 25; 6, $7.00; 12, $12. For select queens add 25c each to above prices. Queens in quantity lots or bees by the pound, write for prices.
Robt. B Spicer, R.F.D. 181, Wharton, N. J.

Young tested queens, $1.00 each; $12 per doz. Untested, 75c; per doz, $7.00. We breed three-banded Italians only, and we breed for the best; our 30 years of queen rearing prove this. We never had a case of foulbrood in our apiary, and we guarantee every queen sent out by us.
J. W. K. Shaw & Co., Loreauville, La.

My Three-Banded northern-bred pure Italian queens must be seen and tried to be fully appreciated for hardiness and honey gathering qualities, etc. Give me a trial order. My prices for August and September. Untested, 80c. Select untested, $1.15. Select tested, $2.50.
Fay L. Barber,
290 State St., Lowville, N. Y.

Carniolan Golden and three-banded Italians. One untested, 85c; 6, $4 80. Tested, 1, $1.25; 6, $7.20. Breeders, $4 00. Bees by the lb., $1.25 per lb. Nuclei, 1 fr., $1 75; 2 fr., $2.75; 3 fr., $3.50, without queen. Full colonies in A. I. Root hives with Hoffman frames with queen, 8-fr. hive, $7 50; 10-fr., $8 00.
D. L. Dutcher, Bennington, Mich.

For Sale—Pure Italian bees with tested queen, $4 50 per col.; cols. with mismated queens, $4 00 each; light colored hybrid cols. with queen, $3.50. All from the J. P. Moore's strain and in 8 frame hive bodies in winter cases, standard full depth self-spacing Hoffman frames, 8 to each hive. All combs straight, strong and healthy with plenty of honey, f. o b. here. ½-lb. package wire cages without queens, one, $1.50; 2, $2.00. If queens are wanted add price of queens to package. Untested, 85c. Tested, $1.50. Breeders, 3.00 to $5.00.
Wilmer Clarke,
Earlville, Mad. Co., N. Y.

FOR SALE—300 colonies of bees, free from disease; mostly in Root hives, with equipment, at a bargain; should have about 10,000 pounds of honey to take by July 15.
R. W. Rogers, Lometa, Tex.

HONEY AND BEESWAX

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

FOR SALE—Well ripened white clover honey in new 60 lb. square cans. Write for prices, stating quantity wanted. Sample 10c.
L. W. Mundhenke, East Dubuque, Ill.

COMB HONEY our specialty. Highest market prices obtained; prompt returns made. Send us your shipments
Albert Hurt & Co., New Orleans, La.

FOR SALE—Raspberry, basswood, No. 1 white comb, $3 00 per case; fancy, $3.25; 24 Danz. sections to case. Extracted, 120-lb. cases, 9c per lb. W. A. Latshaw Co.,
Clarion, Mich.

SUPPLIES.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville, Tex.

WINTER PROTECTION — When division-boards are put in supers at sides next brood-nest and bees seal up all cracks, thus creating double-walled dead-air chambers on all six sides of brood-nest, result is bees in our hive are in better condition in spring than those of any colonies in ordinary hives.
Wm. F. McCready, Bx 2, Estero, Lee Co., Fla.

FOR SALE

EIGHTY ACRES of good land in Jersey Co., Ill., well fenced, fine six-room house, good barn and out-buildings. All kinds of fruit. Price, $7,000. If taken quickly, will include 26 hives of bees in standard 10-frame hives, in good condition. This is a fine honey location with several good market towns near.
Frank Brown, Route 2, Jerseyville, Ill.

HONEY LABELS

HONEY LABELS that create a favorable impression on the buyer. Dealers admire them and give them prominence. Catalog Free.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

HONEY AND BEESWAX

CHICAGO, July 18.—For the past month there has been little doing in honey, so that a market price is really a difficult thing to quote, as parties who have carried over their honey are accepting what they are offered. We look for the new comb honey to sell at about 13c per pound for the best grades of white, and for the time being the ambers may bring nearly as much, as there does not seem to be much of that in the market. Extracted ranges from 7@8c per pound for the white, and 6@7c per pound for the amber.

Very little of the harvest of 1916 is on this market, and what there is, has not been sold, the weather now being warm, the retail trade are not endeavoring to sell.

Beeswax is bringing 28@30c per pound according to color and cleanliness.
R. A. BURNETT & CO.

KANSAS CITY, MO., July 17.—There is quite a heavy flow of white clover honey in this section, and on account of the heavy crop, the demand is more or less slow. The price for the best stock, 24 sections, ranges around $3.50 a case. Extracted honey is moving fairly well at 7c for old and 8c for new.
C. C. CLEMONS PRODUCE COMPANY.

SAN ANTONIO, July 17.—Owing to the large crop of honey having been thrown on our market, and the lack of cooperation among producers, the prices are somewhat demoralized. South Texas bulk comb honey is moving freely at 8c basis, and good quality extracted at 6c. Prices show a tendency to become stiffer, and we expect higher prices to rule in this section within 30 days. Beeswax is firm at 25c cash and 27c exchange basis. SOUTHWESTERN BEE CO.

DENVER, Colo., July 19.—We are selling new crop comb honey in the local market at the following jobbing prices: Fancy per case of 24 sections, $3 38. No. 1, $3.15; No. 2, $2 93. White extracted, 8½@8¾c per pound; light amber, 8@8¼c per pound, and amber 7@8c per pound. We pay 26c per pound in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.
THE COLO. HONEY PRODUCERS' ASS'N
F. Rauchfuss, *Mgr.*

Better Queens and Bees for Less Money

20 Years of Select Breeding Gives Us Bees and Queens of Highest Quality
Queens for Honey Production - - Queens of Unusual Vitality
QUEENS THAT SUCCESSFULLY RESIST EUROPEAN FOULBROOD

Our select colonies for breeding purposes, larva and select drones are those of the highest standard, the choice of over 1000 hustling honey-producing colonies of pure Italian bees. These select colonies are located at such a distance from all other bees as to assure pure mating, and thus effective use of our select drones. The larva we use in grafting is as small as can be seen and handled, having just come out of the egg. These are placed cells which in turn are placed and nourished in strong ten-frame colonies, which, when honey is not coming in sufficiently, are heavily stimulated by feeding. Thus we get large, well nourished cells which in turn produce large long-lived and hardy queens, which give workers unexcelled for honey producing qualities. We use no baby nuclei. All our queens are hatched and reared in strong three and five frame full-depth hives. Thus natural conditions are preserved and the best queens produced.

PRICE LIST OF OUR 3-BANDED AND GOLDEN ITALIAN QUEENS
READY BY RETURN MAIL

Untested............50c each or $45 per 100 Tested..................$1 00 or $ 90 per 100
Select untested.....60c " " 60 " " Select tested........... 1.25 " 115 " "

All queens warranted purely mated. Wings clipped free of charge.

PRICE LIST OF OUR SWARMS OF BEES FOR YOUR FALL INCREASE

1-lb. swarms with select queens......$1 75 2-lb. swarms with select queens......$2.50
3-lb. " " " " ...... 3 50 5-lb. " " " " 5.00

We can now fill all orders for either queens or swarms of bees by return mail and express. We have no disease of any kind. Satisfaction we guarantee.

M. C. BERRY & CO., HAYNEVILLE, ALABAMA

THERE OUGHT TO BE QUALITY HERE

"We are furnishing Kennith Hawkins, the 'Quality Hill Queen' Breeder, one of our 'Queens of Quality,' and will offer queens from one of The Review mothers crossed with his 'Quality Hill' Drones for 1916. We do not think one can make a mistake in buying this stock." No buyer of 24 or more Queens for delivery after June 15, can afford not to ask for our special discounts on these great honey gatherers.

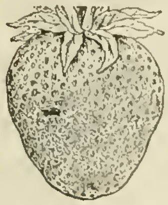
The Review, December 1915: This Townsend breeder exceeded the average of 1100 colonies by over 500 percent last year. Sure will be quality here. These excellent honey queens, one for $1 00; 6, $5.00 12, $9.00 until June 1. Later, one, 75c; 6, $4.00; 12, $7.50. Write for booklet on Quality Hill Queens.

KENNITH HAWKINS, PLAINFIELD, ILLINOIS

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

Langstroth on the Hive and Honey Bee.—A reprint of Langstroth's original book printed in 1853. Of course, this older book is out of date, but it is valuable historically, and should be in every beekeeper's library in connection with the modern revised work. Postpaid, $1.00. Clubbed with the revised book, price of both, $1.85. Both books and Am. Bee Journal one year, $2.50.

A Year's Work in an Out-Apiary. This is a booklet by G. M. Doolittle, the well known honey producer of New York State. He tells how he secured an average of 114½ pounds of honey per colony in a poor season. It is fully illustrated, and tells in detail just how Mr. Doolittle has won his great success as a honey producer. Price, postpaid, 50 cents; or with the American Bee Journal one year, both for $1 25. Every beekeeper should have a copy of this booklet and study it thoroughly.



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Trial Subscription To Fruit and Garden Paper

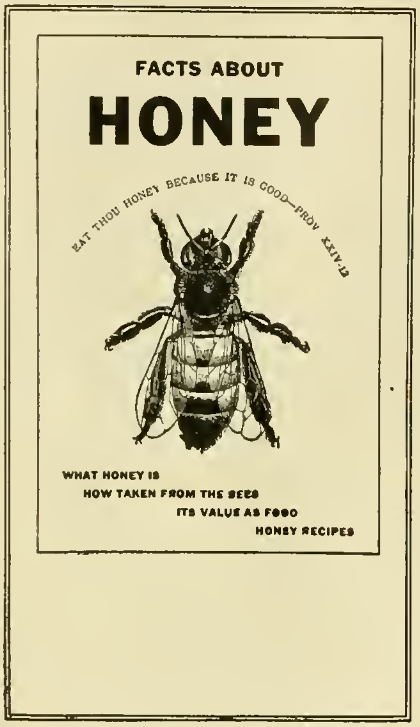
Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

FACTS ABOUT HONEY



FACTS ABOUT

HONEY

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the 'Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " "	9.00
30 " "	.75	2000 " " "	17.00
50 copies, postage extra	.75	5000 " " "	40.00
100 " " "	1.25	10,000 " " "	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

American Bee Journal, - Hamilton, Illinois

American Bee Journal

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

PRICES—Untested, April, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

START THE SEASON RIGHT

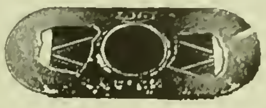
By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE



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TIME
MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
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Please mention Am. Bee Journal when writing

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST

BEE SUPPLIES

Best Sections, Best Shipping Cases
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

Queens and Bees
FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5 00 each. One pound package bees, $1.25; 25 packages, $1 00 each; 2-pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2 75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

A FINE untested Italian Queen for 60c. Tested, $1.00. Satisfaction guaranteed.

J. F. ARCHDEKIN
Bordelonville, La.

BECAUSE IT LASTS

That is One Argument in Favor of Cypress as a Beekeeper's Lumber

CYPRESS LASTS PRACTICALLY FOREVER

CYPRESS "THE WOOD ETERNAL"

There are many qualities that make the value in lumber depending, of course, on the uses to which they are put. But of all virtues that of **endurance** comes first. The wood that resists rot influences longest, especially when the wood is used in a service by which it is exposed to wet and dry conditions and earth-contact—that wood is accredited with being able to give the user the greatest INVESTMENT VALUE.

No use tries the lasting qualities of lumber greater than that of Bee Hive construction. It is the very deuce to get lumber that will not too readily rot—unless one gets Cypress lumber. Then there is a good show for endurance that means **real money saved on Repairs You Don't Have to Make.** Try it, Mr. Beekeeper.

STUDY THE WOOD QUESTION

There's one way to get at this matter of endurance—through books of authority. Such are the 41 volumes of the internationally famous Cypress Pocket Library. These books are not "advertising"—they are authoritative references on file in the libraries of scores of technical schools and National institutes. Ask for Vol. 1 to start with; it contains the complete U. S. Govt. Rept. on Cypress, "The Wood Eternal," and a full list of the other volumes; then branch out until you cover the subject.

SOUTHERN CYPRESS MFRS.' ASSOCIATION
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Alburg, Vt. May 3, 1916.

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AMERICAN BEE JOURNAL

SEPTEMBER, 1916

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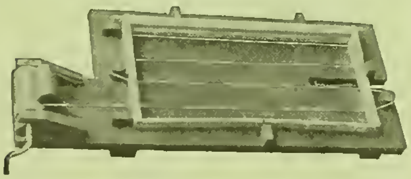

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Warranted	1.10	5.50	9.50	19.00
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Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
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When queens are wanted with nuclei add queens at above prices quoted for queen

1 ½ lb. package, wire cages, without queens $1.00
2 " " " " " " 1.50
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If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

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Representatives of The A. I. Root Company, and Queen Specialists.

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Will also buy—

White Clover extracted and Amber extracted.
A few cars of California Water White Sage.
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Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

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	1	6	12	25	50	100
Untested....	$ .50	$3.00	$ 6.00	$11.75	$22.50	$43.75
Select unt...	.65	3.50	6.75	12.50		
Tested......	1.00	5.50	10.00			
Select test..	1.50	8.50	16.00			

We guarantee that all queens will reach you in good condition, to be purely mated, and to give perfect satisfaction.
All orders filled at once.

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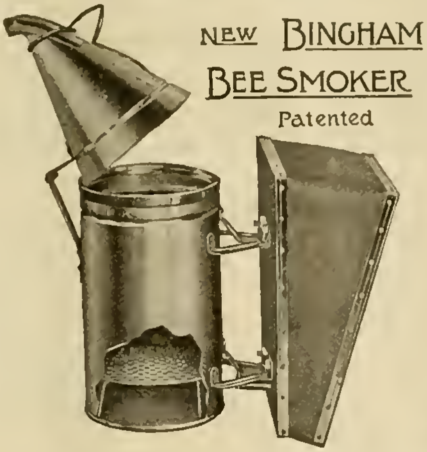

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Two larger sizes in copper extra.		.50
Conqueror, 3-inch stove...........	23 oz.	.75
Little Wonder, 2½-inch stove.....	16 oz.	.50

Hinged cover on the two larger sizes postage extra.

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5-lb. friction-top pails, lots of 50 at $2.75; 100 lots, $5.20; crates of 203 at $10.
10-lb. friction-top pails, lots of 50 at $4.00; 100 lots, $7.50; crates of 113 at 8.30; 565 at $40, f. o. b. Chicago.
60-lb cans, two in a case, 70c per case; quantity lots, 67c per case; crates of 50 at $12 f. o. b, Chicago or Ohio factory. Prompt shipments are being made at this time.

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rendered into wax with our hydraulic wax press. Perfect work.

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is spreading in various parts of the country. The first step in its cure is a vigorous strain of ITALIANS

The Root Strain of Bees have Shown Themselves to be Highly Resistant

While we do not claim their introduction will alone cure European Foulbrood, or that it will not make a start in their colonies, we have reports of where they have, with a little help, fought themselves nearly clean of European Foulbrood which was all around them in black and hybrid colonies.

These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

PRICES.—Our regular price is $1.50 in June and $1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for $1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

The A. I. ROOT COMPANY - - - Medina, Ohio

QUEENS OF MOORE'S STRAIN OF ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, 1, $1.00; 6, $5 00; 12, $9 00
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Safe arrival and satisfaction guaranteed. Circular free.

I am now filling orders by return mail.

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American Bee Journal, Hamilton, Illinois.

Scientific Queen Rearing.—This is practically the only complete book on queen rearing now in print. It is looked upon by many as the foundation of modern methods of rearing queens in a wholesale way. G. M. Doolittle, its author, has an entertaining way of writing on bee subjects which helps his readers to follow him with pleasure even if they never intend to rear queens at all. He describes just how the best queen can be reared in nature's way. Cloth bound, 124 pages, 75 cents, postpaid. There is also a leatherette-bound edition of the same book which retails at 50 cents, or with the American Bee Journal, both for $1.00.

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No.		10	100
1	holding 24 sections, 4¼x1⅞, showing 4	2 00	18 00
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1½	holding 24 sections, 4¼x1½, showing 4	1 90	17 00
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Shipping Cases, With Glass

Number and description	Nld	In flat, with 3-in. glass			With 2 in. glass
		1	10	100	100
11 Same as No 1	35	25	$2 30	21 00	20 00
13 Same as No 3	22	.15	1 40	12 50	12 00
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16 Same as No. 6	30	.22	2 10	19 00	....
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W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

WANTED HONEY

Both Comb and Extracted

If comb honey, state grade and how it is put up, and your lowest price delivered Cincinnati.

Extracted honey, mail a fair size sample, state how it is put up, and your lowest price delivered Cincinnati.

If prices are right, we can use unlimited quantities.

C. H. W. Weber & Company, 2146 Central Avenue, Cincinnati, Ohio

Sweet Clover Seed

QUICK GERMINATION

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PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22.50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

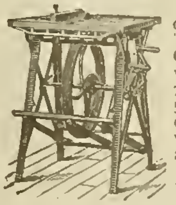
PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it." Catalog & price-list free

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Advanced Bee Culture.—A new edition of this book by the late W. Z. Hutchinson, of Michigan, is a practical and up-to-date bee book for the specialist beekeeper. Its 200 pages touch on subjects pertaining to modern beekeeping, and all are discussed with the authority of an expert. The book has many beautiful illustrations. It is cloth bound, with a cover design in natural colors on its cover. Price, postpaid, $1 00; or with the American Bee Journal one year, both for $1.75.

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The Kind that Does Not Break in Folding

Beekeepers everywhere, no matter what their preference may be for hives or special apparatus, agree that when it comes to sections that

There are No Sections Like Lewis Sections

WHY IS THIS TRUE?

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At the same price you pay for other standard makes of sections you get all of the above—the making of Lewis Sections has been under the supervision of a Lewis Section Expert who "has been at it" for over thirty years—no wonder Lewis Sections are perfect. One of our customers tells us that he has put up (folded) thirty thousand Lewis Sections in a season, and has not found one section in the whole lot that was not perfect. Can we mention any more convincing evidence of quality? Can you say the same of even five hundred of any other make?

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Catalog on request giving nearest distributer

AMERICAN BEE JOURNAL

Vol. LVI.—No. 9 HAMILTON, ILL., SEPTEMBER, 1916 MONTHLY, $1.00 A YEAR

PACKING BIG APIARIES FOR WINTER

A Simple Method that May Be of Use Where Packing of Some Sort is Required and Time is Limited

MANY beekeepers object to out-of-door wintering because they think that too much labor is necessary to properly pack the bees. Since extensive honey producers who practice wintering on the summer stands have systems by means of which they are able to pack the bees as easily as they can be placed in the cellar, an article describing such a system somewhat in detail seems timely. While the particular system described in this article may not be suited to the conditions of the extreme north, it is well adapted to localities where the bees have frequent opportunity for flight. Where more careful packing is necessary, as in Canada and the northern United States, the same method of gathering leaves may be used. Such modifications as are necessary to meet different climatic conditions will readily suggest themselves.

The pictures with this article are nearly all taken in the Dadant apiaries where nearly 600 colonies are wintered on the summer stands. It should be remembered that the Dadant frame is 2⅛ inches deeper than the Langstroth frame, and that a deep frame is considered an advantage in out-of-door wintering. However, if there are plenty of stores and a deep bottom to provide clustering space under the frames, bees will winter very well outside on Langstroth frames.

The first essential in preparing a large apiary for outside wintering is an abundance of some cheap packing material. For this purpose, leaves serve as well as anything and can usually be obtained at little cost. In order to handle the leaves economically nets must be provided in which to carry them from place to place. In the Dadant apiaries nets are still used which were first made by the late Charles Dadant. When empty they somewhat resemble a large hammock. They are about six feet square, with meshes of about four inches and are made of heavy fish-cord. A net full of leaves will pack four or five colonies, and a large hay-rack will carry perhaps 25 filled nets, or enough to pack about 100 colonies.

The first operation is to lay the nets flat on the ground and stake down the corners. With hand rakes, the leaves are piled on the net as high as possible. The corners are then taken up and fastened together, making a big bundle as shown in Fig. 1. As fast as the nets are filled they are corded in big piles, and if to be left for future use are covered with a canvas to prevent being wet by rain. (Fig. 2). If the apiary is situated in the woods where the leaves are gathered they can be used as raked, but otherwise it will be necessary to haul them to the apiary as shown in Fig. 3. Fifteen filled nets are piled on this wagon with strips across the box to serve the purpose of a rack. The cover picture shows how the automobile is utilized for carrying smaller quantities of leaves. The five nets shown in the picture contain enough leaves to keep the men packing until the slower moving wagon or truck reaches the outyard.

The nets last many years if properly cared for. Some made by the elder Dadant 25 or 30 years ago are still in use. If purchased in the market they cost about $1.25 each, and enough should be provided for a full day's operations.

In the Dadant apiaries straw mats are used over the brood-frames as shown in Fig. 5. When the packing begins the first operation is to remove the oil-cloth from the top of the frames and replace it with the mat. Care is used to see that a bee-space is provided between the frames and the mat to per-

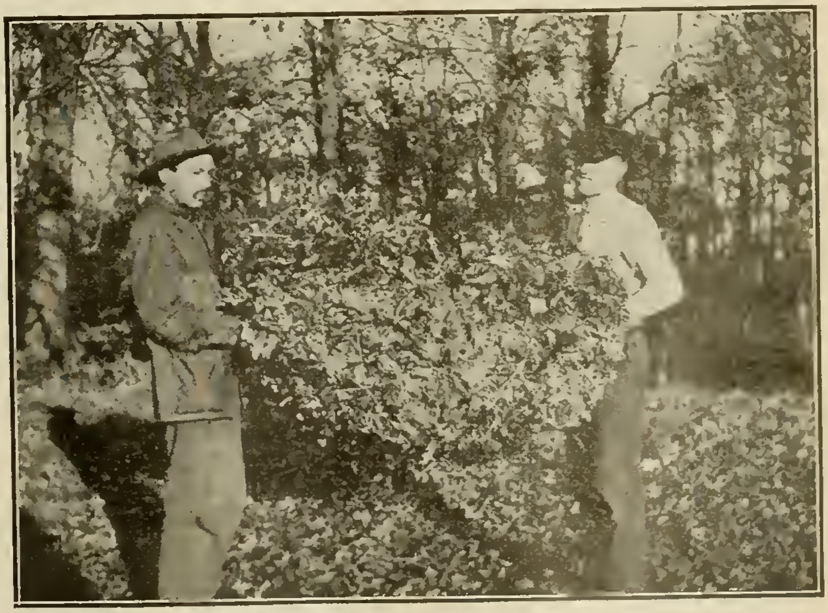

FIG. 1.—A NET FULL OF LEAVES

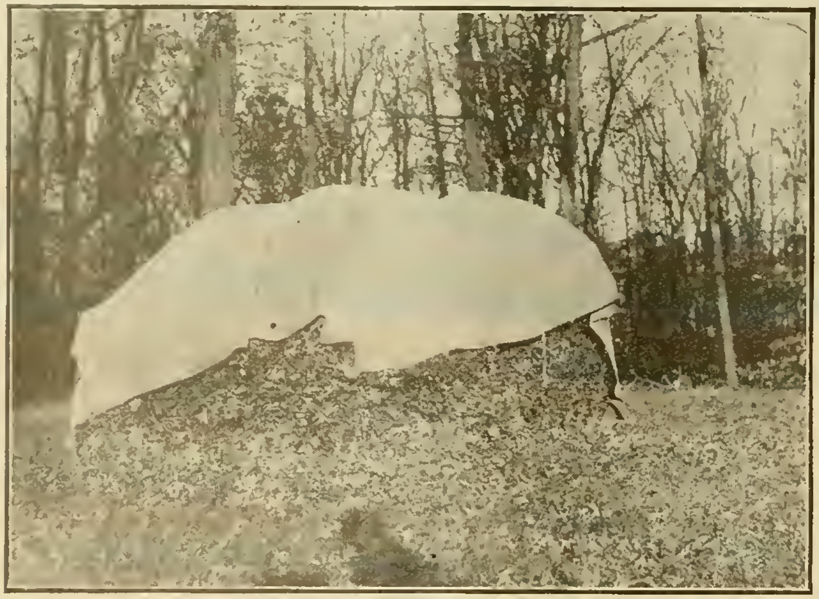

FIG. 2—LEAVES ARE CORDED IN BIG PILES

mit the bees to move from one frame to another. If burr combs are not present to serve this purpose a small stick is laid across the frames before the mat is put in place. The big cover is then filled with leaves and placed on the hives, as shown in Fig. 6. In practice it is found that four men can work together with a minimum loss of time. Two men go ahead and place the mats and fill the covers. These are followed by two others who pack the hives on the outside. (Fig 7.)

For holding the outside packing a small strip of woven wire is used (Fig. 8) This encircles the hive as shown in Fig. 8, leaving the front open. Fig. 9 shows the final operation of packing and Fig. 10 shows the hive snug for winter.

With this system the straw mat and super of leaves absorb the moisture that would otherwise condense within the hive. In ordinary winters the bees come through in most excellent condition. In winters when extreme cold prevails for long periods of time, much depends upon the quality of stores. If care is used to see that only good quality honey or sugar syrup is present in the hive, and that no honey-dew or poor honey is left for the winter food supply, the bees will withstand a surprising amount of cold and come through nicely. A combination of poor stores and extreme cold is likely to prove disastrous by any method of wintering.

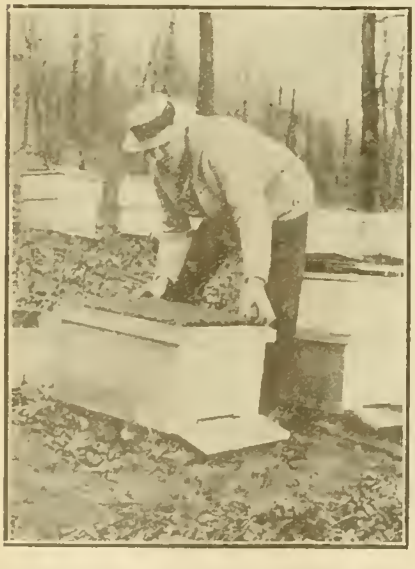

FIG. 5—STRAW MATS ARE PLACED DIRECTLY OVER THE BROOD-FRAMES

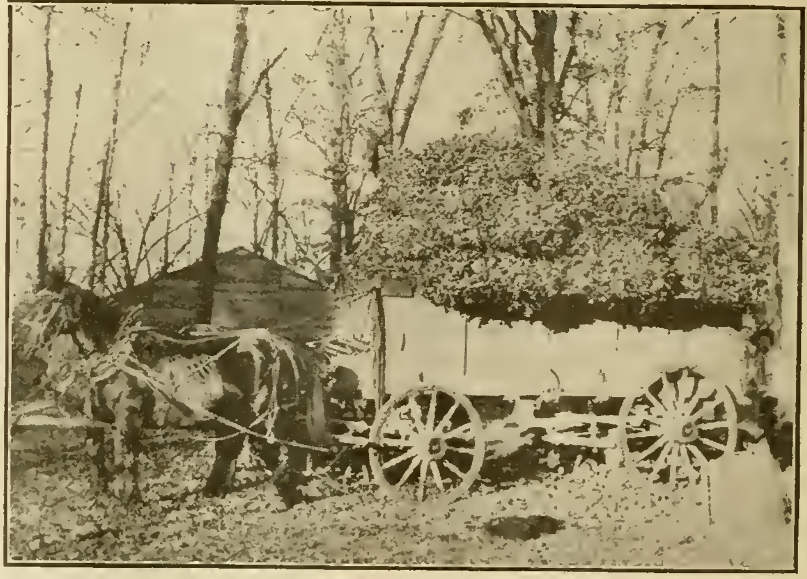

FIG 3.—A WAGON LOAD OF LEAVES READY TO GO TO THE OUTYARD

Four men will gather the leaves and pack about 100 colonies in a day. If the weather is favorable a force of four men pack the entire 600 colonies in the seven Dadant apiaries in one week. It is doubtful whether they could be prepared for winter in shorter time by any other method. Their large hives when full of stores are very heavy and large cellars would be required to furnish sufficient storage room for cellar wintering. The interest on the money necessary to build seven such cellars would more than pay all the cost of preparing the bees for winter by the packing plan, leaving capital free for use otherwise and saving depreciation. Thirty-five years of experience in wintering large numbers of bees by this method offers convincing evidence that for this climate no better results are likely to be obtained by any plan yet made public.

While this method is entirely satisfactory for this latitude and southward, we would hardly recommend it for northern latitudes. Farther north more packing is desirable and an outside winter case is very satisfactory. This adds somewhat to the expense.

Wintering in the West

BY WESLEY FOSTER.

IT has been said that we have no wintering troubles here, and it is partly true, although we do lose 10 percent of our bees every winter. But we also lose 10 percent of our bees from swarming and nearly as much from bee diseases. If we saved all of our colonies that we now lose from disease and in wintering, and also saved all swarms that issue and abscond, we would have to either buy many new hives each year or we would have to learn how to preserve the full strength of our colonies in the hives that we have, and keep them constantly at work.

If the swarming will balance the losses we are about even, but not quite. The ideal condition is freedom from losses in swarming, disease and wintering. This may be done, and is being done, to quite a large extent by a few.

We can winter colonies well in 2-story 8-frame hives, so why not unite all colonies headed by old queens with those colonies having young ones? This will give us the next spring plenty of extra hives for the increase we may

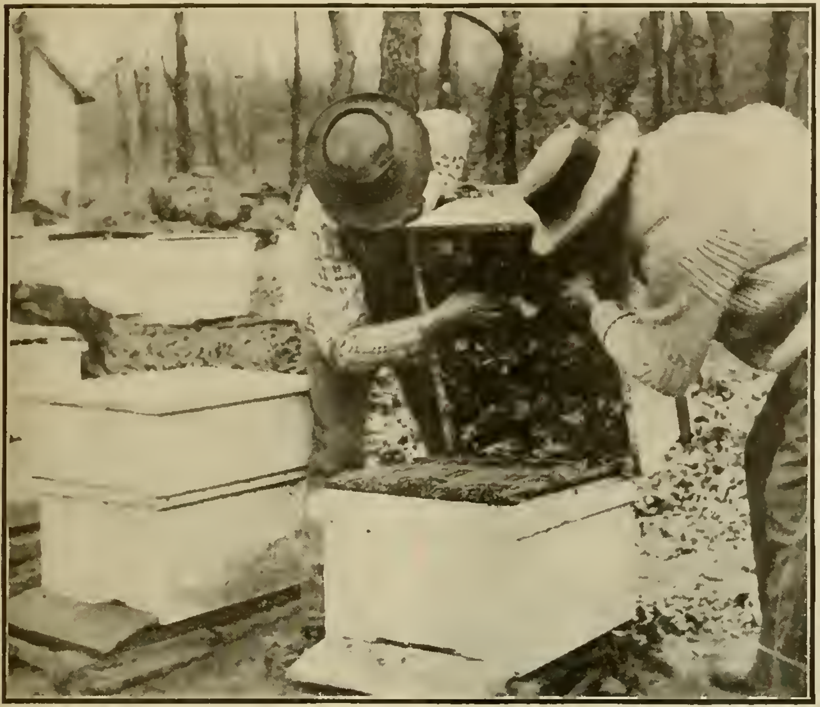

FIG. 6.—THE BIG COVER IS FILLED WITH LEAVES AND PLACED ON HIVE

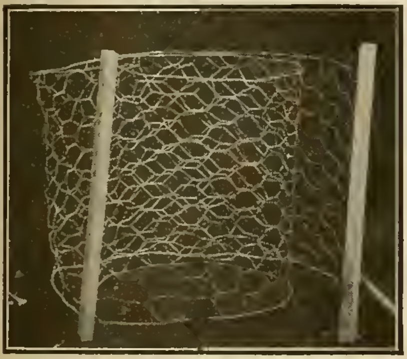

FIG. 8.—WIRE USED TO HOLD OUTSIDE PACKING

make or have forced upon us.

I have tried this, and know that large 2-story hives with young vigorous queens are heavy honey gatherers. Another experiment that was tried on five colonies and worked out well was to divide five normal single-story colonies at the close of the honey flow. Each new division was given a young queen and these 4-frame nuclei were wintered in 10-frame hives, two in each one. The following spring each of these nuclei was equal in bees and vigor to the average of my single-story colonies that had not been divided. Of course, I had to add honey and combs in the spring, but the experiment was an interesting one. This plan probably would not work at all unless the season was a normal one. The colonies were all wintered on the summer stands.

In the Rocky Mountain region, where the winters are comparatively dry and the temperature not severe, we will undoubtedly waste our time in trying to obviate winter losses by wintering in cellars, in packs, or double-walled hives. This does not refer to Wyoming Montana or Idaho, where the winters are either more severe or the atmosphere not so dry as in Colorado. For Colorado, Utah, Nevada, New Mexico, parts of Wyoming and Montana, the wintering problem cannot be helped by packing. Let us look to having young queens, sufficient stores of best quality and protected locations, with our hives so placed that the combs and bees will remain dry, and the winter loss will be very slight.

Colonies that have bred heavily nearly all season, or those where the queen has had the run of several extracting chambers are almost sure to perish unless requeened with young queens in August or September. Such a queen that has done excellent work during a season rarely is superseded and she is very apt to die in the fall or winter.

I have several rows of missing hives in my apiaries that are mute testimonies to the fact that these best colonies in extracted honey production will not requeen themselves where their queen begins to fail. The bees may take her slackening in egg laying to be but the normal let up of the season. Such a queen does not come back to fall breeding and the colony perishes before spring.

The desired condition in the Rocky Mountain country is to winter every normal colony, and this is being done by many beekeepers right along. We do have unfavorable conditions, but the exceptions prove the rule. Colonies wintered in packs, double-walled hives or in cellars, do not winter so well as those colonies left on the summer stands where the location is favorable and where the honey is of good quality and the queen a young one.

One of our troubles in wintering is from inferior fall honey, and we can get a good percentage of such honey stored in shallow extracting combs placed on the hives at the close of the season. These may be removed during the winter and replaced on the hives again in the spring when the bees can use it in breeding.

Our winter losses largely occur from easily remedied troubles. We do not protect our hives from the winter winds; we can so easily keep the hives dry, but we neglect it. Our queens appear to be all right until the colony dies of queenlessness; foulbrood is so easily controlled that we wake up after a colony has been robbed out; bees need so much ventilation, and we let a colony go a month or more in an outyard with no cover on it. Our outapiary fences need repairing, and cattle

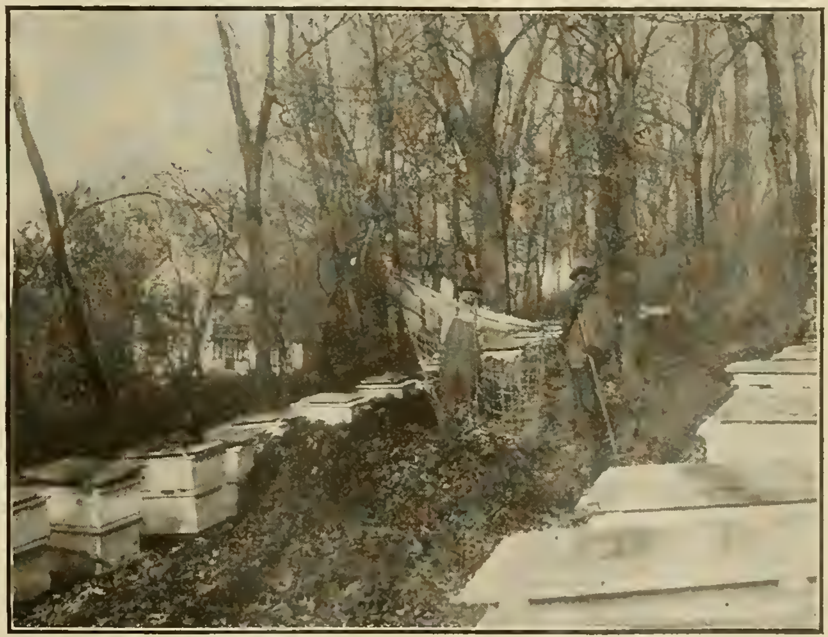

FIG 7.—TWO MEN FOLLOW AND PACK HIVES ON THE OUTSIDE

get in among the hives, disturbing the bees and causing loss. These causes of winter loss may not be worth while mentioning in an article on wintering, but they are the things that cause the bulk of our losses.

We lose something every winter from thieves stealing honey from colonies until they either starve or die from exposure caused by lack of combs in the cluster.

There is one condition where the advocate of more protection might score a point, and that is when we have a month of zero weather and some of our normal colonies perish. We should have some accurate data on the losses from this cause in the Rocky Mountain region. If the expense of more protection will not be more than the losses suffered we should know it. The majority of beekeepers here think that the losses are less than the expense of more protection would come to. Are they right?

Some of our most successful beemen have even given up trying to winter bees in their locations and fill their hives with bees from the South shipped in one and two pound packages. If this is cheaper than solving the wintering question, we would like to see the matter handled by men who know. Bees from the South received at the time of fruit bloom in the North gather honey more rapidly than do those that have wintered here in the North. With cheaper express rates and a lessening of the losses in shipment we may find the wintering question vanishing for there will be none if we quit trying to winter our bees.

Boulder, Colo.

Wintering Bees in California

BY J. E. PLEASANTS.

WHILE there is no wintering problem in California as in colder climates, there is a certain amount of preparation necessary to meet the condition of partial rest, which occurs during the cessation of the honey flow and the rainy season. There is never any time of the year when there is not something in bloom from which bees gather some nectar. This is especially to be noticed in the irrigated valleys and along streams. The eucalyptus, where planted in sufficient numbers, furnishes much nectar, and many species are winter bloomers. Even in the mountains and on arid plains there are several species of "drouth" plants that furnish nectar to some extent in late summer and autumn. This is, however, only relatively speaking. There are not sufficient supplies from such sources to justify any beekeeper in stinting his bees at the last extracting, expecting them to fill up in the fall enough to go through the rainy season safely. Every colony should be left at least 25 pounds of honey, or more.

From Sept. I until the middle of January (or Feb. 1, if in the mountains) there is very little for the bees to work on. Rain may be expected any time during this period, though it is unusual to have much before the latter part of November, cool nights, and occasionally high winds.

Bees fly almost any time here when the sun shines. To prepare bees for the winter season here they should be confined to the brood-chamber or not more than one super left on. That is sometimes best to take care of full combs. Of course, all bees are wintered in the open here. The hives should be carefully examined to see that the covers are all thoroughly water-proof, and a weight should be put on the cover. The common practice here is to weight them with stones. These are always handy in the mountains, and one finds them used in sizes varying from 5 to 20 pounds in weight. They hold the cover in place and prevent the hive from being blown over if hard winds occur. Sometimes these stones do not appeal to an inspector who has to go through an apiary of several hundred colonies alone, but as he is sure to use them at home there is nothing to be said. Of course during the honey flow, and especially in outapiaries, supers are used up to three, and even four, stories.

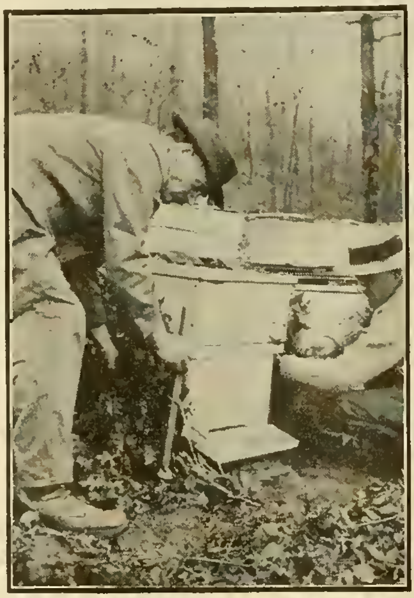

FIG. 9.—PUTTING ON THE OUTSIDE PACKING

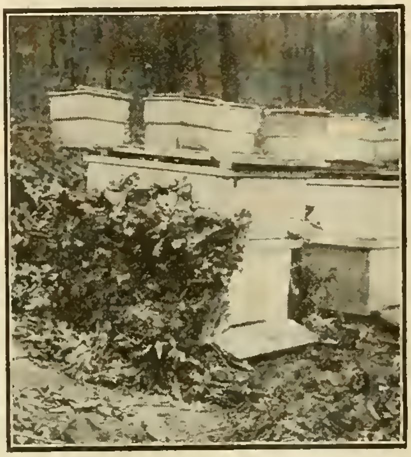

FIG. 10—THE HIVE SNUG FOR WINTER

In fixing up for winter these surplus combs must be taken care of so they may be returned to the bees in good condition the next spring. They should be fumigated and stored away in moth-proof quarters, if possible. Where one super is left on the hive, most of the full combs can be taken care of here and used as a surplus for the bees. The hives should be looked through carefully to be sure all have good queens. The hives should be raised from the ground a little on a frame stand a few inches high to keep them from dampness, where cement slabs are not used as foundations for the hive. This, the cement slab, is the very best I have seen, as it is permanent and where extended a few inches in front of the hive obviates the necessity of hoeing away weeds close to the entrance.

As the fall here is the dangerous season for forest fires, an apiary should be well cleaned from grass, and where it is possible a fire-break should be made around it. By Nov. 1 the entrance of the hive should be slightly contracted, and those who use ventilators should close them, or the bees will.

Skunks are a menace to bees here at this season, and outapiaries should not be neglected in allowing them as they will soon weaken a colony. Poison is the best method for getting them, as outapiaries are not visited frequently enough to use traps. A little poison put in an egg slightly open at one end, and set up in some receptacle near the hive, will almost always get the skunks, as they are very fond of eggs.

After an apiary is prepared for winter, the less the bees are disturbed the better. The best way to tell if feeding is necessary is to "heft" the hive, as opening it may cause robbing.

With these few precautions, or rather preparations, our bees winter comfortably here in the apiary and unless the beekeeper has other occupation this is the time for his vacation. Most beekeepers here though, even those who have large apiaries, have some other side line.

Orange, Calif.

Winter Warmth in the Colony

BY DR. K BRUNNICH.

FOR rational beekeeping, especially for outdoor wintering, it is important to be well informed concerning the economy of warmth in the hive. Everybody knows how much the bees depend upon the outside temperature. Ordinarily they do not fly below 48 to 50 degrees. Still higher temperatures are needed for queens or drones to leave the hive. At about 56 degrees a single bee is soon paralyzed. The brood needs a uniform warmth of 98 degrees; if the temperature sinks under that point, the growing insect may be injured.

An important question is: How does the quiescent bee produce warmth? How does it proceed to keep its temperature higher than that of the surrounding air? I cannot agree with Dr. Phillips' theory that they produce heat by motion, especially of their wings, for two reasons. First, I think it is impossible on account of lack of room. We know that in the coldest weather the bees are crowded together in the narrow lanes of their wax town, many of them being motionless in the cells. Under those circumstances, they cannot move their wings, and moreover the oscillations of the wings would produce currents of air unfavorable to the conservation of warmth. Every one who has had occasion to see a colony dead from hunger will agree with me. The bees are packed so closely together that any considerable free motion of the wings is excluded. And a starved colony is indeed a frozen colony. When the bees are unable to produce heat for want of food, the temperature of the cluster sinks and at last the bees are paralyzed and die. Secondly, I believe it impossible for physical reasons, *i. e.*, the bees are unable to furnish mechanical activity sufficient to maintain the caloric equilibrium. A cluster consuming daily, in very cold weather, an ounce of honey, produces about 120 greater calories, which correspond to 360,000 foot-pounds, a mechanical labor which can hardly be produced by a quiescent cluster.

Nevertheless I admit that, in strong chills, the peripheric bees often make movements with their wings to protect themselves from freezing. Further more I admit that a small part of the production of heat is due to mechanical labor through the muscular work of *respiration*, *circulation* and *digestion*.

I believe that the greatest part of the production of heat is purely of a chemical nature. It may be as with the bear or marmot, in their winter sleep, who burn their fat probably mainly in the liver and transform it directly into warmth. The liver is the great stove which warms the blood, and by this the whole body. The necessary oxygen is brought by the arteries, the poisonous gas is eliminated by the veins and the fuel is supplied by the *portal vein*. I believe that, in the bees, the tubes of Malpighia correspond to the liver in mammals. They are a bundle of exceedingly rich, fine tubes discharging themselves into the small intestine. The oxygen is furnished by a rich web of *air capillaries*, the fuel—sugar—comes from the blood and the poisonous gases take their way out through the air capillaries.

It is a well-known fact that the more the bees consume of their stores the more unfavorable are the circumstances of warmth conservation in the cluster. Besides the material loss, a surplus consumption has other disadvantages; the wear and tear on the bee is greater on account of the augmented labor of digestion. What is worse, the waste of food augments in the large intestine and the danger of dysentery in spring is considerably increased.

Let us now examine how bees proceed to preserve warmth. We know that they cluster together closer as the temperature sinks, in order to diminish to a minimum the surface, which radiates heat according to physical laws. The loss of heat is proportional to the surface and to the difference in temperature between the surface and the surrounding air. Similarly there is in the cluster a constant radiation of warmth from the center to the periphery. For outdoor wintering there are four possibilities:

1. If there is no warm wall around the colony. In this case the cluster takes the form of a sphere, because this form represents the minimum surface of all solids with the same volume. If the room does not allow the formation of a sphere, the bees cluster in the form of an ellipsoid.

2. If at the top of the combs there is a warm cover, which reduces the loss of heat there is a minimum. In this case the bees form a hemisphere and the free radiating surface is only about 4–5 of case 1. A warm cover, therefore, saves in cold weather about 20 percent of the food.

3. If two colonies are close together, have one common wall and are both covered with a warm cushion (twin-hives). In this case, both colonies behave as if they were a single colony without a separating wall; both form, together, a hemisphere. Therefore, in each colony, there is no loss of warmth against the neighbor, the temperature being the same on both sides. Here each colony forms approximately half of a hemisphere, and the exposed surface of each colony is only about ⅝ of case 1, or about 5–6 of case 2.

4. If four colonies are close together, have four common walls, and are covered with warm cushions. All the four colonies behave like a single one and form, together, a hemisphere. Here the free surface is about ½ of case 1, ⅝ of case 2, ¾ of case 3 (50 percent, 36 percent, 24 percent). If I understand it correctly this would be the case with the tenement hive.

We thus see that the contraction of the cluster is a means for the regulation of the temperature inside of the colony; the greater the cold the greater being the contraction. Another factor of this regulation is the greater or less production of heat by the bees individually. In view of the wonderful adaptation of the bees to external conditions, we judge their proceedings in the regulation of the inner temperature to be as follows:

When it is very cold, the cluster must produce, in the center, sufficient warmth, that the heat at the periphery may keep the bees from being chilled, *i. e.*, about 57 degrees. Therefore, the colder it is, the higher the warmth of the center must be to make up the greater loss by radiation. This gives a law which appears at first view paradoxical. The colder it is, the higher the temperature is in the center of the cluster. If the temperature of the air is higher than 57 degrees, it is not necessary for the bees to form a compact cluster and each bee produces its proper warmth, for itself, probably some degrees higher than the outside air.

The above explanations agree well with the researches of Phillips. He found 57 degrees Fahr., the critical temperature of the cluster, *i. e.*, that if the outer air begins to fall under this temperature, the bees produce warmth so that the inner temperature rises. Should the bees allow the inner temperature to sink below 57 degrees without taking precautionary measures, they would be chilled and would perish unless the temperature should rise again.

Phillips has already pointed out the injurious effect of inside or outside disturbances (noise, mice annoyances, drafts of air, unsuitable food, etc.), this producing an unnecessary rising of the temperature at the center, with all its bad consequences.

The circumstances are different when the colony begins to breed. In this case, the central temperature is higher than necessary, *i. e*, it is under all circumstances about 98 degrees. The surplus warmth causes a loosening of the cluster, which is favorable to the free circulation of the breeding bees as nurses, fetching pollen and honey. It is then most important to keep up the warmth by cushions or otherwise.

Zug, Switzerland.

Queen-and-Drone Traps

BY F. GREINER.

SOME years ago it occurred to me that I might more successfully handle my bees in the outyards if I could in some way hinder the queens from leaving the hives. I therefore went to work and got out enough material for a large number of queen-and-drone traps, intending to make them up for use that season. However, I made up only a very few, and after observing how much the bees were hindered by them, particularly in entering the hive, how many pollen pellets were dislodged from their pollen baskets, the manner in which the drones behaved attempting to gain the outside, etc., I concluded that I would lose more by using the traps than I could possibly gain. I admit I did not test it out. I simply did not have the courage to torture my bees with such a nuisance and I dropped the matter.

When our colonies are most populous, when most honey producers give the largest entrance, even placing blocks under all four corners of the hives, in order to make it as comfortable for the inmates as possible, if we are to shut down to a small entrance full of obstructions, thus aggravating the already dangerous conditions, what result can be expected? Everything crowding to the only exit, multitudes of drones trying to force their blocky bodies through the narrow perforations, thereby hindering the workers! The drones are slow in finding their way through the little cones up into the trap and collect in great numbers. The noise they make is trying on the nerves of the apiarist.

I think we should have laws on our statutes to prevent such torture of these little insects. I have not found much use for drone-traps so far.

The clipping of the queens is only a safeguard, at best, in case we make a miss in our management. When every queen *is* clipped the chances that a possible mass of 25 pounds of bees may go to the woods are small. The larger the number of bees kept in a place the more necessary it is to have all queens clipped. In a large yard several swarms may issue at the same time, and if one queen is with them, they are sure to go somewhere before the apiarist is likely to give them attention. To his sorrow he will discover that the supers on a number of colonies are empty of bees. He may then wonder why. Queens not all clipped.

Naples, N. Y.

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Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Instructions to Beekeepers

The Agricultural Extension service of the University of Minnesota is publishing a monthly letter of advice to the beekeepers of the State, under the management of Prof. Francis Jager. It is a good thing. Other States would do well to follow this method.

Fertilization of Queens

H. Mulot, having in the course of years had more than a thousand opportunities for observation as to the fertilization of young queens, reports some of his findings in Leipziger Bienen-Zeitung, page 115.

He says that fertilization usually occurs between 12:00 m. and 5:00 p.m., with still weather and a temperature of at least 65 degrees Fahr., mostly between 1:00 and 3:00 o'clock p.m., and quite rarely before 12:00 or after 5:00 p.m., or at a lower temperature than 65 degrees. If the weather is favorable, most queens are fertilized at the age of 6 or 7 days.

"Several years ago," he writes, "virgins emerged from their cells on the same day in about 20 of my colonies and nuclei. To determine at what age they were fecundated I examined each day after 5:00 o'clock p.m., to see whether fertilization had taken place, as every experienced beekeeper knows the signs of fertilization are easily seen; besides one may know from the beginning of egg laying, which usually occurs 42 to 48 hours after fertilization. One queen mated at 4 days of age; 3 at 5 days; 8 at 6 days; 6 at 7 days; and the remaining two at a later age; the weather during this time having been favorable throughout."

It may be recalled that Henry Alley said no virgin ever mated under 5 days of age, which very nearly agrees with the foregoing.

It would appear from Mulot's figures that a queen should generally be laying when 8 or 9 days old. At first, however, eggs are so few as not to be easily found, so in ordinary cases it is as well not to make an examination until the queen is 12 days old or older. It must be remembered, however, that the weather is not always favorable, so there may be delay.

Sectional Hives

The question of sectional hives having been raised lately, we have secured for the Bee Journal a very interesting thesis covering the entire subject by an enthusiastic Canadian student, Mr. W. F. Geddes. This thesis was approved by the able Canadian professor, Morley Pettit, of Guelph, Ont.

Heading Off Swarming

A Pennsylvania correspondent asks my comment on J. P. Blunk's way of heading off swarming, as given in Gleanings for July 15, page 610, which is as follows:

"Prepare a hive with an empty comb to catch the pollen, a comb of suitable brood from which queens can be reared, and fill up the rest of the space with dummies. Put this hive on the stand of any strong colony that is preparing to swarm, with a couple of supers on top. Put on a good wire escape-board, and on top of all set the strong colony without its bottom-board. The flying force will all go downstairs in 24 hours, and so few bees will be left in the original hive that they will tear down all queen-cells, which might be on the combs; the queen, of course, being left in the old brood-chamber on top.

"The queen will keep right on with her laying. In 14 days take the old hive off, remove the queen, or leave her, as desired. Put one of the queen-cells built in the lower story in the old hive and set it on a new stand. Contract the entrance and remove all cells except one from the new colony. Supply frames of foundation, put on more supers, and the job is done.

"If no increase is desired put the combs in the prepared hive below back in the old brood-nest, after removing the queen from the latter. This will not take long, as the bees are scarce, as above mentioned. It is necessary to remove all queen-cells but one on the frame of brood in question."

I am not certain whether I fully understand the whole proceeding, but on the face of it it looks as though the old brood-nest with the queen is left for 14 days in the story on top, with nothing coming into it, with a ticket-of-leave for any bee that might want to go below, and never a bee returning, and with such a dearth of two weeks duration one would hardly expect the brood-nest to be in the most flourishing condition. But Mr. Blunk is a beekeeper of experience, and no doubt makes it work all right. Possibly he makes an opening from without to this story above, through which the younger bees establish an entrance.

My correspondent says: "Bees might, with the arrangement directed, not go through the escape in 24 hours; I have just now three cases in which I had three comb-supers on that many colonies, and in 24 hours the bees did not get out, while they did wherever there were but two or one super." Well, if they were very much longer than 24 hours, it wouldn't matter, the important thing is that nothing would be going *in*, and that would discourage the bees so as to insure the destruction of all queen-cells. But it must be noted that the two cases are very different. When we put an escape under surplus honey, we want *all* the bees to get out, and the sooner the better. In the case in hand we do not want all the bees to get out; it would be a disaster if they should, and Mr. Blunk expressly says that *the flying force* will go downstairs in 24 hours, leaving the younger bees to do duty as nurses. C. C. M.

United Effort

The following item appeared in a recent issue of the Breeders' Gazette:

NATIONAL ADVERTISING OF DAIRY PRODUCTS

A fund of $50,000 has been subscribed by men prominent in the dairy industry for the preliminary work of the big national advertising campaign to increase the production and consumption of milk, butter, buttermilk, cheese and ice cream. Advertisements are in preparation and will shortly appear in weeklies and monthlies of national circulation and in leading dailies.

It is proposed to raise a total fund of at least $750,000 to cover a complete campaign of three years and to expend in advertising, general publicity and organization work approximately $20,000 a month for 36 months.

There has been no more remarkable

development than is shown by the dairy industry in this country during the past 25 years. While honey has shown a tendency to lower prices, butter has steadily increased in production and at the same time the price now averages at least twice and probably three times what it did once. If honey production is to become a leading industry the beekeepers must learn from their prosperous neighbors. From the above it will be seen that a fund of $50,000 was readily subscribed to begin a campaign of advertising which has for its object not only increased consumption but also increased production of dairy products. With a fund of three quarters of a million dollars they will do wonders in a 3-years' campaign.

A few years ago there was an element among the dairymen loud in its cries that butter and cheese would shortly be produced at a loss because of over-production. Now the leaders are proposing to advertise the increase production along with consumption. They know full well that if production does not keep pace with the increased demand substitutes will take the place of their products, as has been the case with us when corn syrups have to a large extent replaced honey on the table of the American family and lowered the price of honey instead of raising it.

The Oldest of the Bee Journals

A very pretty little magazine entitled "Little Lands in America," in its July number, gives a quotation taken from Gleanings in Bee Culture, which it mentions as "the oldest of the bee journals." We do not wish in any way to disparage our courteous and well-managed contemporary Gleanings. But this qualification does not belong to it. The oldest of the bee journals now in existence is L'Apiculteur, of Paris, which was established in 1856. The next oldest, and the oldest in the English language, is the American Bee Journal, which was established in 1861, in Philadelphia, Pa. Gleanings and the British Bee Journal were established simultaneously in 1873.

Prepare Now for Winter

To the smaller and inexperienced beekeeper it may seem premature to open the discussion of wintering in this number of the American Bee Journal which reaches our readers on the first of September.

And yet it is even now late enough to make the most thorough preparations if we would have our colonies come through the winter in good shape, so as to avoid large winter losses, spring dwindling, and so as to have all colonies in the best possible condition for the harvest next year.

There are four major factors in the preparation of colonies for winter which make for this desired end. They are:

1. Plenty of good stores.
2. A strong cluster of young bees.
3. A good queen.
4. Protection.

It is absolutely imperative that all colonies be supplied with abundance of good stores so that they will not want at any time during the winter. This is especially true of the North, localities where it is harmful to disturb the cluster on account of the cold. It is equally advisable in the warmer climates, although not so imperative, since feeding could be done during winter if necessary.

The beginner will ask how much honey is required. It is advisable to have at least 30 pounds to the hive, the quantity varying some with localities and duration of lack of honey flow.

Such stores should be good stores. This is also more imperative in the North where the bees are often months without a flight. Here, care should be taken to avoid honeydew, sour honey, fruit juices, and other honeys which have a deleterious effect on the bees. Aster honey has been reported from time to time as belonging to this class, though in some localities it seems as good as any other honey.

A strong cluster of young bees. The emphasis should be placed on *young*. Too many beekeepers think their colonies in excellent condition because at the close of the summer flow they are strong in bees. The fact is that most of these bees have done their share of the work and are old. The result is a dwindling in the numbers of the colonies early in the winter, causing either total loss of the colony during the winter or serious spring dwindling. In the absence of breeding in the early fall, owing to a dearth of nectar or some other cause, it is very often advisable to stimulate such breeding by fall feeding.

Only too often the lack of fall breeding is caused by a failing queen, especially after such a honey flow as the central West has had the past summer. Queens become worn out with excessive laying and should be replaced. Very often the bees replace the queen themselves by superseding, but the instances of failure of the bees to do this are not rare, and it behooves the beekeeper to make sure that his colonies go into winter with young vigorous queens. This is not only desirous on account of fall breeding, but also that the colonies may come out in spring with a good prolific queen rather than be queenless or have a drone laying or failing queen.

Protection varies with locality. In some parts of the country the only protection needed is a good tight hive as a protection against robbers and against the rain.

In other localities cellar wintering is practiced, and conditions of moisture, ventilation and temperature have to be watched carefully.

In a large proportion of localities outdoor protection is afforded. When such is given the beekeeper should make sure of a good tight hive, a sheltered location if possible, abundance of good packing, and proper ventilation. Several methods of outdoor packing are practiced, some of which are given in this number.

Summer Course in Ontario

The first summer course in beekeeping was held at the Ontario Agricultural College, June 12 to 16. There were about 20 in attendance, which was a good number considering the busy season and the fact that backward weather had put all farmers behind with their work.

The speakers included Mr. Frank C. Pellett, State Apiarist of Iowa, Mr. F. W. L. Sladen, of the Central Experimental Farm, Ottawa, Mr. James Armstrong, Vice-President of the Ontario Beekeepers' Association, Morley Pettit, Provincial Apiarist, and Geo. F. Kingsmill, assistant to the Provincial Apiarist.

The work was concluded to supplement the winter course applying in the apiary the things learned in the classroom. Members of the class were expected to supply themselves with veils and smokers and were given apiary practice.

Crop Conditions

Latest crop reports indicate a good flow of clover honey throughout the central and eastern States. Colorado conditions are probably below normal, while parts of Idaho, New Mexico, and Arizona indicate about half a crop. California will probably yield 60 percent of a normal crop with Texas conditions about normal.

So far the honey markets have been low, owing to the large amount of clover offered. Conditions should improve, however, and prices should rule about as strong as last year unless present reports are erroneous.

No. 4.—A Trip Through Texas

BY THE EDITOR.

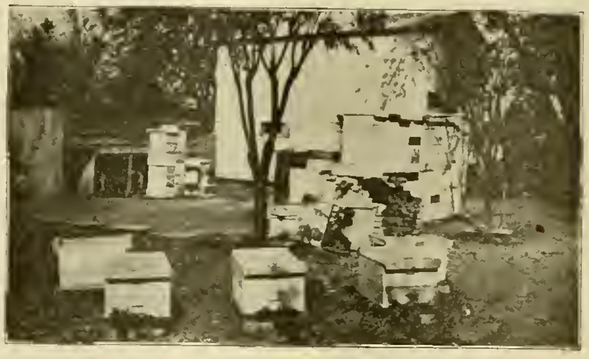
WE now had to leave our headquarters at San Antonio and did so with regret, for the beautiful city, with its warm, dry breezes, its semi-tropical vegetation, its winding little river, its Spanish-American architecture, its far-famed Alamo, rendered venerable by the tragic death of its garrison of 150 Americans in 1836, its numerous but peaceable, bronzed, semi-Mexican population, made a very pleasant impression upon us.

Among the beekeepers whom we met at San Antonio, during our stay, in addition to those already mentioned, were Messrs. H. Grossenbacher and Emil Ripps. The former is county inspector of Bexar county, and from him I received the first intimation of the value of this county in honey production. Mr. Grossenbacher asserts that there are some 700 beekeepers in the county.

According to the statistics of the Texas Experimental Agricultural Station, there are in Texas about 16 colonies in movable-frame hives to one in box-hive. But in Bexar county the proportion is 92 to 1.

Mr. Ripps is the apiarist whose hospitable wife offered to the National Association, at its San Antonio meeting of 1906, an immense bouquet from her flower garden, although the date was Nov. 15, and northern flower gardens were bare. This bouquet was presented to Dr. Bohrer, the oldest member in attendance. The Ripps are still at San Antonio, and still hospitable.

Our next stopping place was New Braunfels, for a call on our friend Louis Scholl, well-known to the readers of the Bee Journal, by his articles on "Southern Beedom," beginning over ten years ago. He was secretary of the Texas State Association when the National met at San Antonio, a position which he held for a number of years.



GROUP OF FIVE HIVES ARRANGED AFTER SCHOLL'S METHOD

LOUIS H. SCHOLL

We had again to thank Mr. and Mrs. LeStourgeon for the trip to the Scholl home, in their automobile. It had all been arranged beforehand and the Scholls were expecting us. These young people had just been married, in 1906, when I met them first, and they look as young as they did then, though they now have a daughter 6 years old.

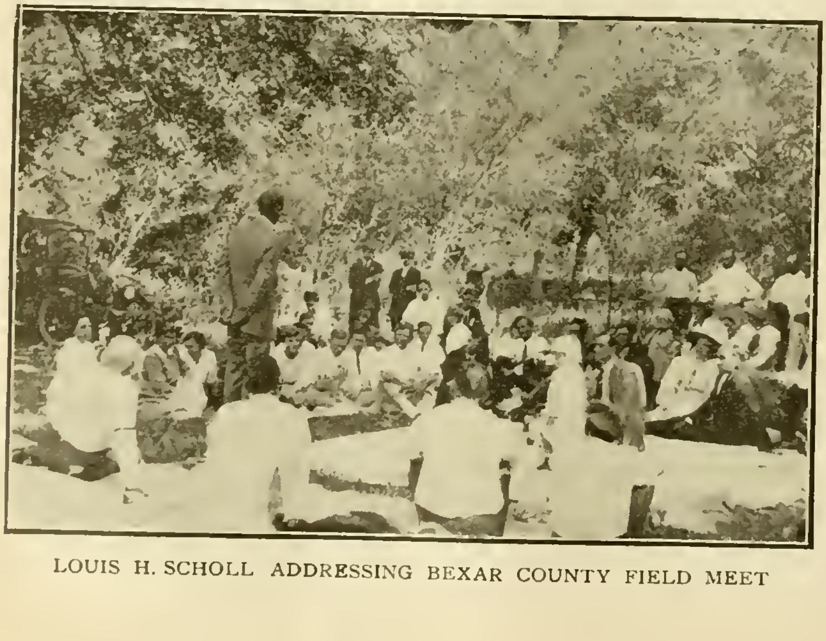
Louis Scholl has as fine a collection of specimens of honey-plants as I have ever seen. A herbarium is difficult to preserve in good shape. We know this by experience, for we secured the Newman collection from Mr. Your some years ago, and we would be ashamed to exhibit it today. The Texas honey flora is so extensive that a collection of most of its specimens is interesting and instructive.

Scholl has at present between 1000 and 1200 colonies of bees. He has had a greater number of apiaries, but lost seven of them in the flood of the Brazos Valley in 1913. All his colonies are in shallow stories, the brood-chamber being of exactly the same size as the supers. Two or more stories are used for breeding and as many more as necessary for surplus. The crop is mainly *bulk comb-honey;* as a rule only enough extracted honey being secured to fill the spaces between the joints of the combs when they are cut and fitted into the receptacles. This custom seems to be uniform all through southern Texas. Scholl's method of beekeeping is very simple, since all the stories are alike. He claims better results than with full-sized brood-chambers.

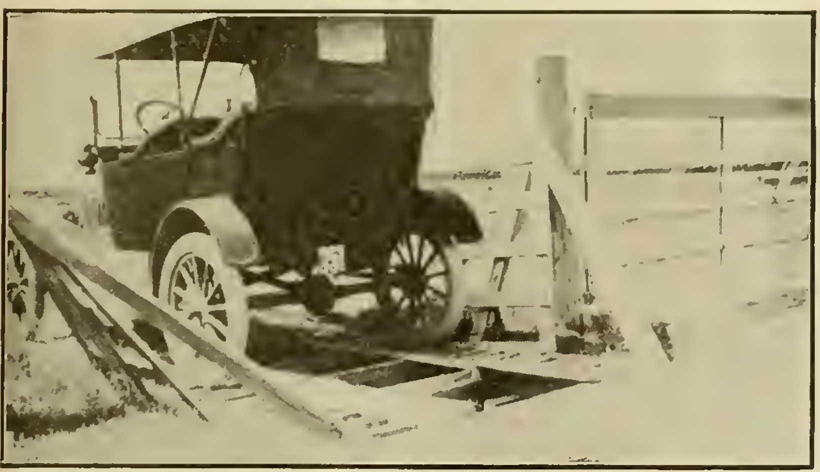
The distance bees usually travel for honey is estimated by him at less than 1½ miles, and with apiaries two miles apart he often notices a great difference in the yield, both as to quantity and quality, indicating that the bees do not work on the same pasture.

He has a few rare bee-books, two of which I had never seen, though I knew of them: "The True Amazons or the Monarchy of Bees," by Joseph Warder, London, 1726, and a translation of Huber's work of 1841.

We visited with Mr. Scholl an apiary which depends solely upon cotton blossoms for its crop, being too far from the chaparral for other grades. The hives are arranged 'Scholl fashion" in groups of five, so the workers and queens are less likely to make mistakes and enter the wrong hive. I believe our friend is correct in saying that long, uniform rows of hives, that are exactly alike, have a tendency to weaken the weak colonies and strengthen the strong ones, as the young bee, at its first flights, is apt to hesitate as to the exact location of its hive, in a long row, and the hum of a strong colony attracts it. This is good reasoning. The worst losses are those of young queens returning from their wedding flight. The colony is at that time usually without young brood from which to rear another, if the queen is lost. So it is doomed unless the loss



LOUIS H. SCHOLL ADDRESSING BEXAR COUNTY FIELD MEET



AUTOMOBILE CROSSING ON TEXAS GROUNDS TO SAVE GATE OPENING

F. B PADDOCK, OF TEXAS

is promptly discovered.

The afternoon was spent at the public park of New Braunfels, whence their river flows. Here, as in San Antonio, a very beautiful stream comes out of the hillside, boiling up from the ground and supplying several hundred cubic feet per second, of the clearest water that may be seen anywhere. It forms a small lake and a river. It is fine. We were told that New Braunfels was an early settlement, and that the scouts sent by the immigrants selected this location because of these beautiful and immense springs. A fine city has resulted.

That evening we bade good bye to our hosts and to the LeStourgeons, whose kindness it will be difficult for us to repay. The next morning saw us on the train for College Station.

Along the railroad line planters' homes, surrounded with groves and built in colonial style, in level plains, indicate cotton plantations. The little cabins, for negro or Mexican field hands, are strung in endless rows along a private byway. The absence of outbuildings for chickens or pigs, around these cabins is striking. Is the planter to blame or are the tenants too shiftless to keep poultry? No wonder there should be a tendency to "provide" by visiting at night the coops of more thrifty neighbors. That is the explanation of the proverbial love of the southern negro for chicken. It appears to be a rarity.

We expected to find something of a town at College Station. But the city, Bryan, is about four miles away. The college is on a gentle sloping hill. Professor Paddock was at the station and informed us that we were to be the guests of the institution, an unexpected honor. An hotel is the usual stopping place of visitors at colleges.

The Agricultural and Mechanical College is not a co-educational institution. It is only for young men and the cadets have military drills during every year of their stay. This 4-year drill ought to come in every United States College. It would help make every man a soldier, in case of need, as in Switzerland, a small country with democratic institutions which is now setting an example to the entire world.

The college boards its students and everything is done with military precision, the morning call and the meals being announced with the bugle.

One of the views given here shows one of the main academic buildings in front of which is assembled the cadet corps. There are three battalions composed of four companies each. This formation is made for all meals and all military maneuvers. The little building shown to the right of the Academic Building is Pfeuffer Hall, one of the dormitories. The part of the building shown on the extreme right of the picture is the Civil Engineering Building, in which is housed the departments of Civil Engineering, Irrigation Engineering, Railway and Highway Engineering and Physics.

The other view shows a portion of the new mess hall, and to the left is shown the Shirley Hotel and the Shirley Annex. In these two buildings a great many of the officers of the college live and board.

It would be out of the limits of my subject to discuss or describe the main agricultural studies of the college. In beekeeping I found very accurate methods and a wonderful system. As I have said before, apiary inspection is in the hands of the entomologist; but it is with the help of county inspectors whose names are suggested to him by the local associations of beekeepers. This is an incentive to organization. The entomologist's principal duty is to tabulate the reports and to direct the work.

The investigations and statistics begun by the previous entomologist, Mr. Wilmon Newell, well-known to our readers, are ably continued by the present encumbent, Prof. Paddock. Blanks to be filled are sent to the inspectors and to beekeepers generally. Among the questions asked is whether beekeeping is preferable as a side-line or as a profession. In most States the answers would almost invariably favor it as a side-line. But in Texas, Bulletin No. 58 shows 705 beekeepers favoring beekeeping as a profession, a remarkable large number, perhaps not to be equaled in any other State.

The replies as to the production of

'APPROACH TO THE MESS HALL AT THE TEXAS A. AND M. COLLEGE.

honey are also noteworthy. Out of a total production reported of 2,400,000 pounds, in round figures, 1,510,000 was bulk comb honey, 823,000 extracted honey, and less than 76,000 pounds section honey, indicating the enormous proportion of bulk comb honey produced.

The college has at present no apiary on the grounds. This is a deficiency that ought to be supplied, in order to give the students of apiculture ample opportunities to study and experiment. Apiculture in Texas is too important not to give it all the attention possible. Many spots of that immense State have no resources as valuable as honey production. The honey of these districts is of good quality and sells readily. They are just beginning to find out the possibilities of the industry. They have a capable, young and energetic entomologist at the head of this department and will doubtless give him good backing. The time has come for full recognition of beekeeping even in States of lesser production.

There is no winter problem in Texas; the worst features being spring dwindling of colonies and foulbrood. The former may be warded off by attention and the supplying of artificial pollen when there is a dearth of flowers. The latter has spent its force and the system of inspection employed will sooner or later put it under full control, when sufficiently sustained by legislation. In the olden days such scourges were like prairie fires and died only for want of fuel, after having swept the land. Nowadays they are stopped by man's ingenuity and persistence.

The acting professor of entomology is S. W. Bilsing, and Mr. B. Youngblood is director of the experiment station. We were taken over the Agricultural grounds in his automobile, and I noticed the peculiar auto passages by the side of the farm gates. They are built like the cattle guards of railroad crossings. This does away with the necessity of opening gates, except when horses are used. It saves time.

I said we were the guests of the college. Before leaving, I must acknowledge the courtesies and kindness of Mr. Sbisa, supervisor of the subsistence department, and of his kind wife, who looked after our welfare. Mr. Sbisa, a foreigner by birth, has occupied his present position for 38 years out of the 39 of the college's existence. His motto is "economy." He does not believe in the too common habit of wastefulness, but knows how to provide abundance through judicious saving. A visit through his department which ended our stay showed us that the "high cost of living" is easily lessened by good management. The total cost of board and rooms is less than $180 per year for each student.

After 18 days in the Lone Star State we returned home March 23, to find ice still ruling a good part of Illinois.

A Letter from Hawaii

BY W. L PORTER.

BEE CULTURE in Hawaii interests me because this tropical country is quite different from our North Temperate Zone. Since the beginning of the European war, nearly all the honey produced here has been shipped to the States and sold at very low prices. The readers of the American Bee Journal may be interested in learning more about it.

We have a daughter who has been living in Honolulu for some time. Wife and I came to visit her last winter. We left our home in Caldwell, Idaho, on Nov. 4, and spent some time at the San Francisco Fair. We sailed for Hawaii on Nov. 9, making the trip in six days. The sea was quite rough when we left the harbor, but Mrs. Porter and I seemed to be good sailors, and the passage was a great pleasure.

It is difficult to express the beauty of scene and climate of these islands, where there is but little change of temperature the year around, no excessive heat, with the thermometer rarely below 60 degrees.

Through the kindness of Mr. Westgate, superintendent of the Experiment Station, I was handed the reports concerning beekeeping in the islands. There are about 20,000 colonies, and the output of honey is around 1000 tons, or an average of 100 pounds per colony. But it is a very low grade of honey. A portion of it is honeydew gathered from the sugar cane, mixed more or less with nectar from the flowers. The only good table honey is from localities where the algarroba tree is abundant and no sugar cane is produced. This tree is somewhat shaped like our honey locust. But the pods are more like bean pods. It was introduced from Australia in 1838 by a Catholic priest, and the original tree is still standing on the corner of the Mission grounds. It is now the principal forest timber of the islands, for it grows rapidly. It blooms twice a year, in May, and again in the fall. The pods contain a sweet gummy substance. They are picked by the natives and the Japs, and sold for about $8 per ton to make algarroba meal, which is used as feed for all kinds of stock. Its honey is white, like alfalfa honey and of mild flavor. When it is free from mixture with honeydew it makes good table honey.

Most of the other honey-producing plants bloom in the spring, but there are flowers in greater or less number the year around.

The honeydew is an aphis production similar to that of the United States.

They have no wintering problem here and it looks like a bee-paradise, but when we come to look into the situation very few people will be tempted to make the change. The greatest drawback is the exceedingly low quality of the honey and the poor price it brings. Mr. Longley, superintendent of the Island Marketing Association, informed me that he had on his hands a quantity of that honey which he is willing to sell at 1¼ cents per pound, and algarroba honey at 2½ cents. They used to ship most of it to Germany, where it was used for baking. They then realized about 4 cents per pound.

The freight to Seattle or San Francisco is $4.00 per ton, so that this honey on our coast is worth about $29 per ton. If it were not of such poor quality, we would face a hard proposition to compete against it.

Mr. E. C. Smith superintendent of the Garden Island Bee Co., is one of the best posted beekeepers on the island. I went to visit him, but he had just sailed for Australia, so I could not meet him. Miss Brown, his wife's sister, had the business in charge. She kindly entertained us and showed us things of interest. She has charge of the queen-rearing for 3000 colonies. After a thorough inspection of the colonies is made, the most of the work is performed by Japanese.

Since the honey market is so low, they aim to produce a large amount of beeswax. Mr. Smith is conducting experiments in this matter, to convert honey into wax by feeding it back. The experiments have not been carried far enough to obtain anything definite on this interesting subject.

In extracting the honey, they aim to get as much wax as possible. They

CADETS IN REVIEW AT THE AGRICULTURAL AND MECHANICAL COLLEGE OF TEXAS use 10-frame hives, but only 8 frames in the supers. They use foundation starters, and when the combs are filled the honey is extracted and the wax rendered. Then new starters are put in. By this method a great amount of wax is produced and of the very finest quality. It also avoids the danger of wax-moths who are very numerous and very destructive.

It is my aim to get fully acquainted with the value of this cheap honeydew for feeding bees. I expect to ship a ton of it to my locality in Idaho for an experiment in feeding, and will be glad to report upon it in the American Bee Journal, as it might prove of value for that purpose to the beekeepers of the sweet clover and alfalfa districts. They could thus save their better grades for sale.

There may be beekeepers in the United States who are looking for better locations and thinking of coming here. In my opinion it is not the place to locate. The best spots are in the hands of four large companies and belong to men who live in the city. The small beekeeper who would live near his bees would have only natives and Japs as neighbors and society. There are no bee diseases here, but the moth, as I said before, is very bad. The climate is pleasant, but the warm air and dampness cause one to perspire so freely that those unaccustomed to it cannot stand hard labor. Very few of the whites here do any manual labor. But it is a beautiful place for a vacation.

Honolulu, Hawaii.

[Mr. Porter, whose portrait was given in our June number, page 189, 1915, is one of our old experienced beekeepers. His interesting letter confirms some of the things mentioned by Dr. Phillips, in 1909, in Bulletin No. 75 Part 5, on "Hawaiian Beekeeping." Dr Phillips already mentioned the desirability of increasing the production of beeswax instead of honey. This branch of the industry does not seem to have made much if any progress in the seven years that have elapsed. An apiarist of South America at one time claimed to produce beeswax on a large scale from low priced honey. Hawaii would certainly be the proper country to do this if the thing is feasible. It is quite probable that the Hawaiians have as good method as may be devised. Even if beeswax costs the bees 10 pounds of honey for each pound produced, there would be a fortune in a practical method of wax production that would not weaken the colony.

We will be glad to hear further from friend Porter.—Editor.]

Habits and Life Functions of Bees

BY J. E. HAND.

In solving problems involving the activities of bees, it is important to have an experimental knowledge of bee nature and a correct interpretation of the laws that govern their acts, lest we draw wrong conclusions concerning their activities. As well try to define the motion of planets in the heavenly constellations with a telescope, without experimental knowledge of astronomy, as to presume to draw right conclusions from observations with glass hives, without the ability to distinguish between abnormal and normal activities of bees. An interesting feature of the domestic economy of the hive is that many important problems are solved by bees incidentally and insensibly through the performance of the ordinary functions of life.

For example, nectar is digested to make honey, and incidentally and insensibly wax is secreted by the internal organs. Likewise, honey is consumed to sustain life, and incidentally and insensibly larval food is secreted by involuntary action, and heat is generated, presumably by the process of metabolism and the oxidation of food consumed and transmitted to the cluster. It is, therefore apparent that every bee that consumes food and inhales oxygen is a unit of incessant involuntary heat generation, not excepting queens and drones.

Likewise supersedure cells are built because of temporary exhaustion o queen fertility, and incidentally swarms are precipitated by the presence of capped queen-cells. I believe that swarming is a momentary impulse developed and quickened by the antagonism of a vigorous queen towards a capped queen-cell, aided and abetted by the innate habit or impulse of bees to seek a new home when domestic discord demands it. Again, bees form a compact cluster for mutual warmth and comfort, and incidentally heat is conserved and regulated by external meteorological fluctuations operating through the expansion and contraction of said cluster. For example, cold weather contracts the cluster, conserving the heat, and causing a rising temperature within said cluster, and *vice versa*. Even a slight contraction will immediately be followed by a corresponding rise of temperature, and *vice versa* It, therefore, follows that expansion and contraction of the cluster is the sum and substance of heat generation and regulation so far as relates to the activity of bees. While I believe these deductions are reasonably correct, mortal is not immune from error, therefore, I have great respect for any whose opinions may differ from mine.

Birmingham, Ohio.

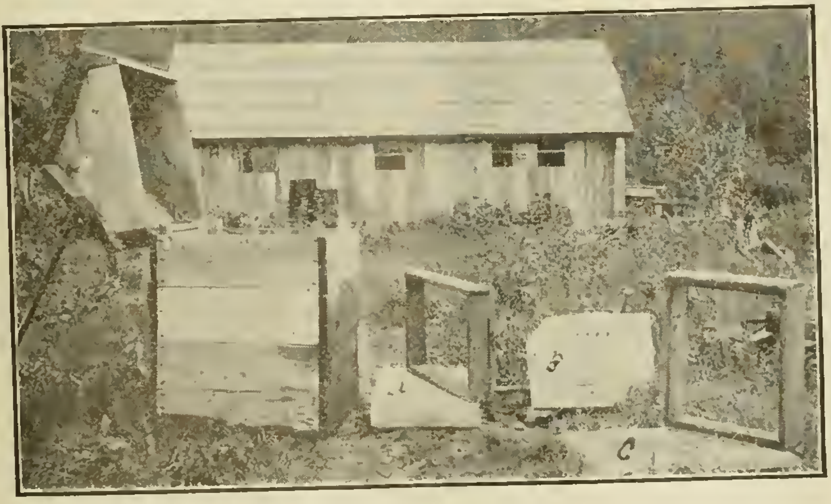
[The term "digested" applied to nectar which is transformed into honey is not accepted by all. There is an undoubted chemical change in nectar, between its secretion in the blossoms and its deposition in the cells and this change is wrought in the honey-sac. But it is not a true "digestion."—Ed.]

Packing a Small Apiary

BY JOHN A. STEVENS.

Attached is a photograph of a part of my apiary and also a photograph of the winter case which I have used for the past four years. As my winter losses are so small I shall continue to use the same method. The cases are 24x28 inches, inside measurement, 30 inches high. Roof hung on hinges so as to turn back out of the way when packing or other manipulations. A shows a bottom-board on its edge or side. The tray is 24 inches long over all. It should have been turned the other way so as to show the 4-inch cap that goes across the front end on top of the tray. This leaves 20 inches to set the hive on, and it butts up against the cap, which makes 5 inches (when the hive is placed in case) for the bees to travel. The trays are about 3 inches deep, which leaves a space between the bottom-board and the lower part of the hive for dead bees to drop, and as the entrance in the tray is at the top, there is no danger of the entrance filling up with ice or dead bees.

B shows the hive with an inverted butter chip placed on top of the brood-frames, which I claim permits the bees to pass up over the top of brood frames when they have consumed all the honey above the cluster and pass over where there are more stores, instead of bumping their heads up against the cover



PACKING CASE READY FOR INSERTION OF A COLONY OF BEES and starving to death. I place a cloth over the butter chip and entire top of frames, then an empty super which I fill with planer shavings, then another cloth, and finish with the cover on top of it. Then I have a 4-inch space all around (ends and sides), which I pack also with planer shavings 10 or 12 inches thick on top of cover. The roofs of the cases are covered with tar felt. I have two long cases in which I place eight colonies in one and nine in the other, but I use the trays the same as in single cases.

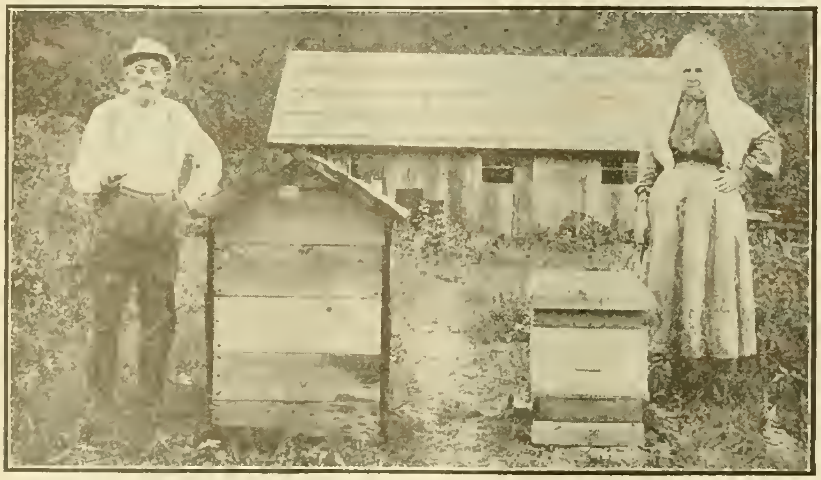
You will notice the entrance in the tray corresponds with the entrance in the case. I keep the bees in the cases until all danger of cold nights and killing winds are past.

The second photograph shows the hive, tray and super in position as it appears when inside the case. My losses last winter were a little greater than any winter before, but it was on account of a lot of unsealed aster honey which I am sorting out this fall.

Photograph No. 2 shows myself and good wife, who is a great assistance to me in the apiary. My bees have averaged me 73 pounds to the colony. We have had so much rain that they had too much time to loaf. While I am a would-be beekeeper, I am proud to realize that I am slowly improving, thanks to the American Bee Journal and other good bee-literature which I obtain.

Mio, Mich.

APIARY OF JOHN A. STEVENS AT MIO, MICH.



A PACKED AND AN UNPACKED COLONY IN THE APIARY OF J. A. STEVENS

Why Honey Producers Should Organize?

BY R. C. GANO.

A NUMBER of doubts have been expressed and objections voiced regarding the plan for a national organization of honey producers, discussed in the March issue of American Bee Journal, under the title, "A National Publicity Campaign for Honey." One of the most valid was that while the annual production of honey is probably in excess of the annual production of oranges and lemons, most of the honey producers carry honey as an unimportant side line, probably less than 200 producers depend solely upon honey for their livelihood. It was argued that while citrus growers have their primary interest in their orchards and can thus afford to take the trouble of cooperating, only a few honey producers consider this part of their production important enough to take unusual pains with the marketing.

This situation certainly complicates the problem, which was complicated enough before this point was brought up. With other objections that have been raised it makes the fact apparent that national publicity for honey, joined in by the entire industry, while it would undoubtedly be a good thing, is so far ahead that it becomes necessary to urge the preliminary steps towards it on their own merit. A great many producers will feel this way: "Oh, what you say may be true, and we would like bigger demand and higher prices; but it's too long a haul. There is too big a preliminary investment of time and trouble." The only answer to that is to show that the preliminary steps would pay, themselves, even before the bigger ideas were achieved.

The first step towards national organization of honey producers should be local organization. The producer can't be blamed for refusing to organize locally if it is going to cost him money in the first few years until a national organization is formed; especially when he realizes things may go wrong and a national organization may never be formed. But suppose it can be shown that local organization would pay of itself, and be a good investment of time and trouble, even if no bigger organization were ever attempted. Then he might well consider taking part in a local organization plan.

What are the benefits of a purely local organization? Do they pay by themselves, in any agricultural industry? Would they pay in the honey industry?

In an endeavor to answer this question at least in part, a query was sent to a district exchange within the California Fruit Growers' Exchange, and here is the reply: "Organizations for the purpose of marketing would be ineffectual and useless, we maintain, operating as independent local associations. All they could accomplish would be possible uniformity of the product through pooling interests, establishment of a regular brand, and reduction of handling costs by cooperating in the preparation of the product for market."

This statement, on analysis, is not so unfavorable to local associations as it may sound. The writer, in saying "for the purpose of marketing" evidently means "for the purpose of controlling or influencing market prices;" because he goes on to show that in other ways local associations are not ineffectual and useless. What are the things that he says local associations can accomplish?

1. Uniformity of the product.
2. Establishment of a regular brand.
3. Reduction of handling costs in preparation of product for market.

From the standpoint of the California Citrus Exchange it is entirely proper to regard a local as by itself ineffectual and useless. One of the citrus locals would certainly appear so if it seceded from the Exchange. Yet it is well to remember that the locals out in the citrus territory are the very heart and sinew of the larger organizations.

BENEFITS FROM LOCAL ASSOCIATIONS.

When every citrus grower was for

himself, the growers in a given community were competitors. A buyer would come into contract for fruit and the growers would bid against each other, cutting each others' prices. The lowest bidders got the orders and more or less set the market price—away down below where it should have been. This same thing happens in every market where the producers are unorganized, though it may not be obvious on the surface. Maybe it was more obvious to the citrus growers than to most farmers, because they saw way back in 1893, how foolish it was for them not to combine against the buyers.

It is perfectly true that local associations of honey producers would not be very powerful in the markets. Still they would eliminate neighborhood competition. If the buyer wouldn't meet the fair price agreed on he would at least have to travel to the next community. And there, if another association was met with, he might still be unable to buy. Local associations would help a little in the crusade for fair prices. District or State association would help more, as has been proved in Colorado.

Saving in Packing.—Before the citrus locals were formed the buyers bought the fruit on the tree, as a rule, and did the packing themselves, charging the growers so much per box for this service. They usually charged 60 to 70 cents a box for oranges, and $1.00 a box for lemons. The local association built a packing house and the growers began doing their own packing cooperatively. Supplies were bought on a fairly large scale, paper, shook, nails, etc. Savings were made at once, though the present cost is probably lower than a local alone could have ever carried it. The present cost is about 33 cents a box for oranges and 60 cents for lemons. Supplies are now furnished by the Exchange's own supply company which secures greater economies than wholesale buying by the locals could accomplish.

Saving in Picking—The picking of citrus fruits is a science. If the fruit is handled carelessly it is pretty apt to decay in transit, being sensitive. Even careful picking by any but experts causes some decay.

The growers formerly picked their own fruit, and in a single year, about 1910, loss from decay in transit to the industry was a million and a half dollars. Local associations have taken over the picking now; it is all done by trained pickers under watchful foremen, and most of the decay in transit has been eliminated. Individual growers could not afford to have their fruit picked as it is today, cooperatively.

The local associations quite early adopted brands for which they gradually earned good will in certain markets, by always insuring that only quality fruit was packed under the brand. This fortified their position in the markets and led to better prices. A general Exchange brand was not adopted until 1907.

And, also, the pack became more uniform. A small grower, attempting to operate alone, would find it difficult to insure only fruit of a certain size and quality being packed in a given box. Pooling the crops of many growers and reducing grading to a system resulted in much better packs, and this, too, strengthened their position with the trade. A reputation for uniform, quality goods is of infinite value in marketing anything. The locals learned this early and logically aimed at such reputations for their brands.

BENEFITS TO BEEKEEPERS.

Now, it is for the beekeepers themselves to study out the various ways in which local organizations would be of benefit to them. Only a few would occur to an outsider unfamiliar with beekeeping.

Beekeepers prepare their honey for market. I have no doubt that a system for doing this cooperatively, where a number of beekeepers are in the same community would not only result in a money saving right on the ground, but would result in a better pack. There are today few packs of agricultural products that could not be much improved, and improved pack means higher price and market prestige.

Then, in the selling there should certainly be a profit from cooperation. If a farmer has honey as an insignificant side-line why should he devote any time to selling it, when one man in the community could sell the honey of a dozen farmers in the same time he could sell only his own, and cooperatively it would probably get a better price? Where the buyer comes to the producer the price paid is notoriously the lowest. Where the producer goes to market and knows how, he gets the best price. A farmer can't travel to a distant market with a few cases of honey. But when a carload is involved that is a different story. A man told in a recent issue of the Bee Journal of going from Texas to Tennessee with a carload of honey, and he knew how to market it and got high prices.

There should be many minor benefits from local associations. Keepers of cows hire cow testers cooperatively and save a lot of money each year by disposing of their least productive cows. They could not afford to hire cow testers, individually. Farmers build grain elevators cooperatively and thus handle their grain at a little above cost, instead of paying extortionate prices as they once did to the elevator companies. They operate cooperative stores and cooperative creameries successfully. University farm investigators in Minnesota have reported that farmers handling their cream through cooperative creameries are realizing 5 to 8 cents per pound more for butter fat than are farmers who sell independently.

In marketing, the writer has been convinced by a rather careful study of the farmer's methods both in organizations and on the outside, that the difference between individual marketing and cooperative marketing of agricultural products is the difference between doing things wrong and doing things right. There are exceptions, but the farmer is essentially a producer, not a marketer. The more he can specialize on production the better; but he can't specialize on production as long as he tries to do this marketing all by himself. Marketing is too big a problem. By association he relegates his marketing to another person who, because he is marketing for many, can afford to specialize *marketing*. Thus both production and marketing are done by specialists and are done right.

Of course, while there are numerous benefits from local cooperation, there are certain additional benefits when several locals get together, purchases in larger quantities, shipments in larger units, a bigger market control, etc., and as associations gradually assume control of a whole industry's output it becomes ideal.

The beekeepers, where enough of them are in a single community, should by all means work out a cooperative plan for themselves. Many of these locals will form the basis for something bigger in future years.

Chicago, Ill.

[Mr. Gano seems to have taken Dr. Bonney's estimate of not to exceed 200 extensive honey producers seriously. The Doctor was either joking or had not investigated the matter or he never would have made such an estimate. There were more than 70 producers present at San Antonio recently when the Texas cooperative association was organized. There are several limited sections where more than that number of extensive producers are to be found. The honey-producing industry is much greater than it is generally supposed to be and is capable of marvellous expansion.—Editor.]

The Sectional Hive

BY W. F. GEDDES.

(*Second year thesis in the Ontario Agricultural College.*)

THE sectional hive is not the particular invention of any one man, but is a growth, or, as the scientists say, an evolution from the hives in use, particularly the standard hive of today, the Langstroth. Shallow or "eke" hives are nothing new, as they date back to the 18th century at least. In the evolution of the hive the eke followed the box type. Some beekeepers having noticed that bees place their honey at the highest part of the hive added an upper story. Later the hives were divided into several horizontal sections called "ekes." The eke, of course, had not movable top bars, and the first ekes were made of straw, but in 1821 Radouan, a beekeeper, introduced ekes of wooden structure. In 1845, Chas. Soria, invented a straw eke, in which he used triangular bars at the top and bottom of each story, placed a bee-space apart so that the sections could be removed, exchanged, or reversed without crushing the bees or damaging the cells. Just as the eke has developed from the box-hive so has the sectional hive of today developed from the Langstroth.

While it is very important to have good well-made hives for the bees, their importance must not be overestimated. A good swarm of bees will store as much honey in a nail keg as in the most elaborate hive made, other things being equal. Beekeeping con sists in understanding bee nature, and the hives are only our tools.

The question of the selection of a hive must be left with the individual himself. He or she must study the conditions prevailing in the locality, and adopt a hive suitable to their requisites. For the average man, or the farmer beekeeper, the standard Langstroth is probably the best; but if one has had considerable experience with bees and wishes to manage a series of outyards for the production of either comb or extracted honey, with a minimum of labor, he would possibly do well to look into the merits of the sectional or divisible brood-chamber hive.

There are many types of sectional or divisible brood-chamber hives. These hives are shallower than the Langstroth, but the frames are generally close-ended and standing. In the sectional hive introduced by James Heddon in 1885, each section consists of eight closed-end close-fitting frames 5⅜ inches deep by 18 1-16 inches long supported at the bottom by strips of tin on the ends of each section. The whole set of eight are squeezed firmly together by means of thumb-screws as shown in the photograph (Fig. 1). The bottom-board will be seen to have a raised rim on two sides and an end to allow for a bee-space under the brood-chamber.

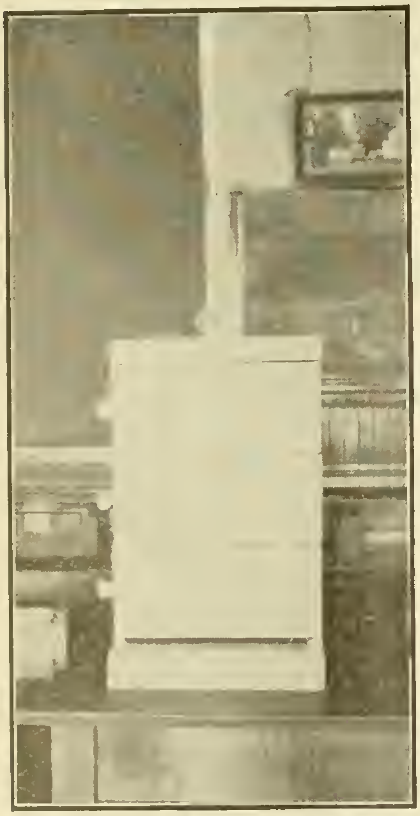


Fig. 1.—The Heddon Sectional Hive

In another type known as the Danzenbaker hive (Fig. III and IV), the frames are 7½ by 17 inches; the hive holds ten frames, and they are crowded together by a follower. On the inside of the ends of the hive a cleat is nailed, and on this support the closed-end frames hang, being pivoted at the center of the end-bars by means of a rivet. This allows the frames to be reversed.

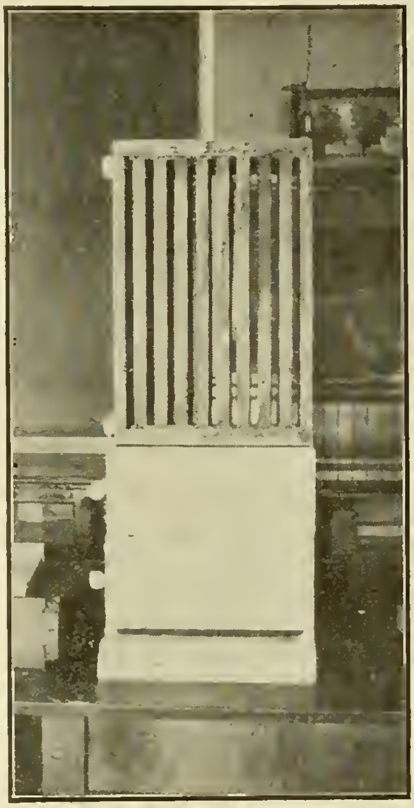


Fig. 2.—The Heddon Sectional Hive—Underside

The sectional hive used by J. E. Hand is similar to the Heddon in principle. The frame is 4⅞ inches deep by 17⅝ inches long. Instead of thumbscrews one side of the section is made with a removable follower board which is held in place with Van Deusen hive clamps, but this follower board is only three-fourths the depth of the section. The remaining space is taken up by a permanent wooden strip which holds the ends and sides in position.

The type of divisible brood-chamber hive which is used by Louis H. Scholl (Fig. V), consists of the ordinary shallow extracting supers 5⅜ inches deep. It is fitted with Hoffman frames 5⅜ inches deep with ½-inch top-bars ⅞ inches wide. All the sections whether for brood-chambers, extracted honey or comb supers are alike.

The principal claim made for the sectional hive is that nearly all the necessary manipulations are performed by handling the sections of the hive instead of the frames individually. This necessarily entails a different system of management from that followed with single brood-chambers. Unless this is understood and taken advantage of it would be folly to use divisible hives because it would require more work to obtain the same results that could be obtained with single brood-chambers. Perhaps one may say that this principal of hive manipulation may be applied to other hives. That is true, but at the same time not so easily or so well. There is quite a difference between handling shallow chambers all day and deep ones. The ease of handling the sectional hive makes it particularly adapted to lady beekeepers.

This hive is also claimed to possess the particular advantage of being a large or small hive at the option of the owner. It can be enlarged for the strongest colony or reduced in size for the weakest. It also permits of a more gradual expansion to keep pace with the increasing size of the colony. Sectional hive beekeepers claim that bees do more and better work if less room is given at a time, and given oftener; also, the room given is in the most accessible form for use, shallow and spread out wide, as near to the brood-chamber as it is possible to get it.

Louis Scholl says: "A satisfactory hive must be so constructed that it can be enlarged or contracted at will, and this can hardly be done with the Langstroth." The force of this claim comes home during the early breeding season when a large hive is often necessary to give room for the rearing of a large number of workers; and, again, there may be a colony, in early spring, not

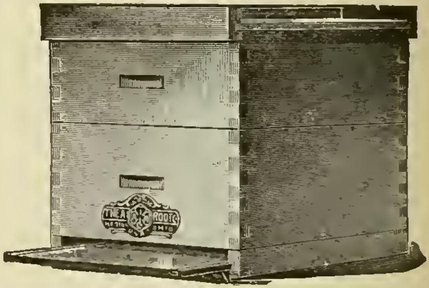


Fig. 3.—The Danzenbaker Hive

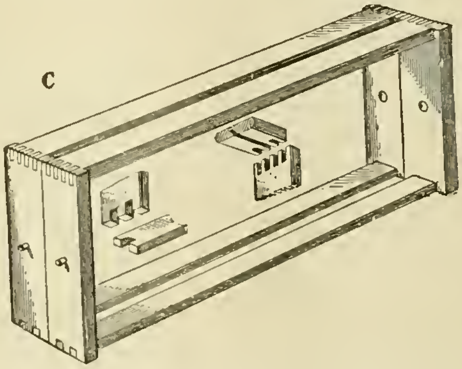
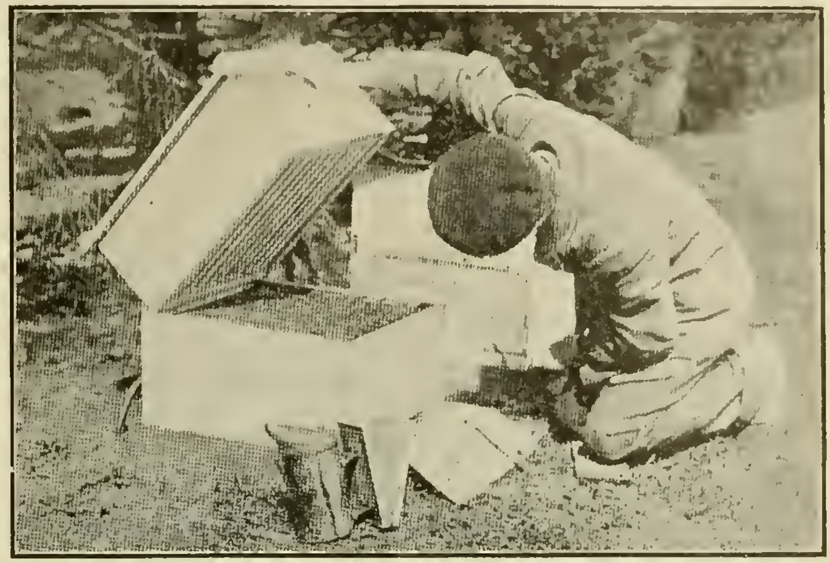


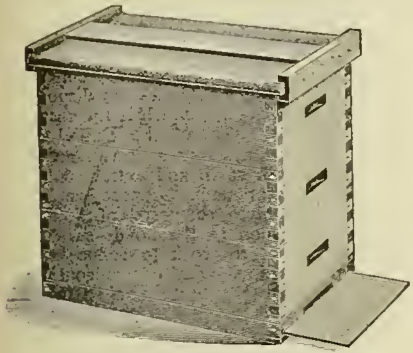
FIG. 4.—THE DANZENBAKER FRAME

even able to occupy one section of the brood-nest. This also applies to strong colonies in short flows and bad years. Some beekeepers state that when the ordinary shallow extracting super is used there will be just as much honey obtained under such conditions as with the sectional hive. The disadvantages of this method, however, are that all parts are not interchangeable, and a comb of honey cannot be taken out of the brood-chamber and placed in the extracting super; also, there are two sizes of supers, two different sizes of frames, and different sized sheets of foundation to buy. In the sectional hive every part is interchangeable.

The interchangeable feature of the super and brood-chamber on sectional hives is said to enable colonies to build up faster in the spring and to render the stimulation of brood-rearing much easier. Usually a colony is wintered in two sections (which have a capacity about equal to a ten-frame Langstroth). These two sections are usually large enough for the early part of the breeding season; the upper section is filled with brood first, then the sections are transposed. The devotees of this hive claim that it is surprising to see how soon the queen will now fill the transposed combs with eggs.



OBSERVING THE CONDITION OF A COLONY WITHOUT REMOVING FRAMES



Shallow Hive Complete.

FIG. 5.—LOUIS SCHOLL'S HIVE

Many sectional hive beekeepers first adopted this style of hive because they found that the bees, in deep hives, very often store a rim of honey above the brood in the brood-chamber. Once this has been done the bees are loath to go up and work in the supers. With the brood-nest in two shallow stories the sections are transposed and the rim of honey thus kept away from above the brood. Beekeepers who use the divisible brood-chamber hive say that the expansion of the brood-nest upwards is in keeping with the nature of the bees, and produces better results, as the same amount of heat generated by the bees will warm a much larger area above than at the side of the brood-nest. As to the stimulating feature, the transposing of the shallow stories before the honey season begins is claimed to be one of the very best ways of stimulating the queen to greater egg laying.

With the deep frame hives this manipulation is also possible, but it involves more labor and the prevention of the swarming fever (it is claimed) cannot be so well accomplished. There are several objections offered to this transposing feature of the hive by beekeepers who have tried it. In the first place they claim that they have no trouble with a rim of honey along the top of the frames in this brood-chamber. They also claim that this storage of honey is due to the stretching of the cells along the top-bar caused by improper wiring, which results in the foundation sagging and stretching the cells. These stretched cells are only suitable for the storage of honey. They also found that exchanging the two brood sections does not always result in forcing the honey along the top-bars into the surplus boxes. It works reasonably well, they say, providing the change is made before the honey is sealed; if it is sealed the bees will remove very little except in two or three central combs. It was also stated that the queen, in spring, is slow in crossing over from one section to another to lay and start a brood-nest there.

E. Eggeman says: "Scores of times I have seen enough surplus bees to cover and nurse a Langstroth frame of brood, clustering in bee-way spaces and empty combs for a week or more waiting until they get strong enough in numbers for the queen to start a patch of brood in that part. After steady warm weather I could see but little difference between the Langstroth and the sectional hive as to the amount of brood cared for."

[To be continued].

FIG. 6—ONTARIO AGRICULTURAL COLLEGE SHOWING HEDDON HIVES IN THE FOREGROUND

Angry Bees

BY ELVIN M. COLE.

PROBABLY most beekeepers have noticed how savage a nucleus often is when in possession of queen-cells; I don't know if this is true of baby nuclei, but in the strong 2 and 3 frame nuclei in which are hatched the few queens I rear they are sometimes almost unmanageable with any amount of smoke.

Mr. G. M. Doolittle mentions this on page 48, in "Scientific Queen-Rearing," but I do not recall ever seeing it mentioned that these same bees become as gentle as usual when the cells have hatched; and this explains, I believe, the remarkable change sometimes noticed in the temper of cross bees when requeened from gentle stock.

Miss Emma M. Wilson gives an instance of this in the Bee Journal of February, 1914, page 47: "The colony was already queenless, a new queen of best stock was given, and the temper of that colony began to improve immediately, not even waiting for the new generation of bees." It hardly seems possible that the new queen could influence the temper of the colony except as her bees hatched and replaced the original stock. I believe such colonies are trying to supersede their queen, and when the cells hatch, or they are supplied with a good queen their temper improves.

Here is my reason for thinking so: On June 1, last year, I received a queen by mail; a fairly strong colony was dequeened, the new queen clipped and "smoked" in. A few days later, wishing to use some of her brood, I opened the hive and the bees came at me with such vindictiveness that they nearly drove me to cover. Their fury reminded me of some of my nuclei with queen-cells, and I concluded that they had cells and were superseding the queen; an examination proved this to be the case. I kept the cells cut out of this colony for more than two months, the bees continuing so ill-tempered all this time that I came to dread opening the hive. The queen was not nervous, and on more than one occasion I watched her deposit eggs in the cells while I had the comb out of the hive.

On Aug. 18, I opened the hive and failed to receive the usual welcome. The bees were as gentle as could be desired and required almost no smoke; so much did they remind me of a nucleus in which a queen-cell has hatched that I felt sure I had missed a cell and a queen had hatched. The open cell was soon found and later the young queen.

I have been re-reading some of the back numbers of the Bee Journal, and in the May number, 1914, page 168, I notice the following: "But I beg to call his (Dr. Brunnich) attention to the fact that the male bees are not attracted to the queens by odor, but by wing sound." I will admit I don't know just how the drone is attracted to the young queen, but the virgin queen may occasionally be seen playing in front of the hive with the other young bees, flying back and forth, making plenty of wing sound, but not attracting the least attention from the drones. This doesn't prove that they are attracted by odor, but it doesn't help the wing sound theory any, and leaves it reasonable to suppose that the drone is not attracted to the young queen until sexual odor is developed.

Audubon, Iowa.

[Our correspondent gives evidence of a careful perusal of the varied experiences and statements published in the American Bee Journal, while doing practical work and making remarks himself. Let us have more of this, all around.

Concerning the different theories on the manner in which the bees, workers, queens or drones recognize each other, is it not likely that all the organs of these highly developed insects are used in their relations to each other as well as in their search for food? Is it not most reasonable to surmise that sight, odor and sound serve in their recognition of each other, as sight odor and taste serve in their search after food?—EDITOR.]

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Moving Bees By Rail

Spring Dwindling—Conditions in Northern California—Beemen Hard Hit

BY J. G. GILSTRAP.

SLIGHTLY over-crowded ranges for bees, together with my fast failing health in Stanislaus Co., Calif., where I had resided about 20 years in the bee-business, and 20 years in Tulare and Fresno counties, 10 of which were in beekeeping pursuits, determined me to move to wider fields. So on Feb. 1, 1916, my oldest boy, 15 years old, and I started from Keyes, Stanislaus county, with one carload of bees and one carload of extras; household goods, team, implements, etc., billed for Montague, Siskiyou Co., Calif., a distance of over 300 miles.

READY FOR SHIPMENT.

I had had my bees prepared for shipment by leaving all two story high, the brood-nest and super well cleated together with four common pine house lath strips, two on each side near the corners; screen covers made from screen just the size of the hive, then with laths I made a rim, two thicknesses of laths with the screen placed between, and then with 2-penny nails, firmly nailed and clinched, this rim made a neat but firmly built screen cover for each hive. About 450 in all were loaded on the car. The entrances were closed with lath strips. The screen covers were fastened on with ten 4-penny cement nails, three to each side and two to each end.

When placing in car we put the back of the hive to back end of the car, one tier across, and then nailed 1x4 pieces on top of the hives, one at the front end and one at the back end, then another tier of hives, and so on, finishing up in the center of the car where all were firmly wedged and braced. The hive lids were piled on top above; the cross slats of the hives. The car end window ventilation and each side door a little ajar. Two days, and a little over, landed us at our destination.

OUR FIRST TROUBLE.

I had paid, on loading, the approximate charge of $98 per car, or $196 for the two cars, estimated at the minimum rate of 20,000 pounds per car. On the road my cars were rolled on the scales, and at my destination I had a gentle surprise handed me. They called on me to "cough up" $126.50 more freight. Say, brothers, there may (?) be lots of fun in moving bees by railroad, but let me tell you, if you live in the West, it is an expensive luxury. Counting my screen covers, cleats, lumber and hired help at each end, and the railroad fare of my family that followed about a week later, my move cost me $450.

FIG. 86.—F. W. L SLADEN, DOMINION APIARIST OF CANADA BEFORE A SPRUCE TREE ON THE COLLEGE GROUNDS

However, we landed in good shape with only a loss of two colonies; they having "leak holes" allowing the bees to escape.

The territory around here is rather in patches, and the best locations were taken before my arrival, so I had to scatter mine. I have eight locations, twice as many as I had hoped to require to give my bees room, and they are so scattered that it takes 57 miles of continuous driving to reach each apiary and return home.

UNFAVORABLE SEASON.

This spring has been the worst ever

known in this part of the State, cold, windy and frosty. The first crop of alfalfa was nearly all ruined. Bees ran short of stores and feeding had to be kept up until the last of May, and I fed some yards until late in June, but on July 1 some nectar started, and at present (July 22) there is a fair flow of alfalfa and sweet clover, some white and red clover.

The cool spring and scattering clouds had caught so many field bees out that it gave the worst "spring dwindling" I ever experienced in 30 years of bee-work, and now many colonies are not yet strong, to say nothing about 75 colonies that died. I only know of one way that I could have saved them, and that would have been to clip their wings so they could not leave in search of honey or pollen.

Say, brothers, if you "evolute" a good variety of wingless honey bees to use to keep up the "spring count" on colonies, so as to stop this *everlasting* spring dwindling, let me know and I will send you an advance order for 200 of the queens.

If the balance of the season runs as it has for the past two weeks, northern, and extreme northern, California will produce about 60 percent of a normal crop.

HANDY HIVE TOOL.

Among the many hive tools I have used is a pocket knife, butcher knife, case knife, corn knife, hatchet, hand ax, planer blade, broken seat spring, screw driver, wood chisel, sheep shear blade, putty knife, and several varieties of home-made and standard factory-made hive tools, but the best all-around hive tool I have yet found is a brick mason's trowel with about one-third of the blade cut off, leaving it about five sided; that is, what is left is five sided, and grind it sharp. It is just the thing to open hives, pry off cleats, scrape wax off from the tops of frames, scrape out hives, wax and dirt off floor after extracting, cut caps out of cans, and if you wish, turn your flap jacks with when in camp at outyards, as well as to pry out frames in the hives. They are all steel, hold edge well, and have a good round end handle that doesn't hurt the hand. Try one.

Montague, Calif.

No. 20.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(*Photographs by the author.*)

FOR years past there has been an occasional mention of spruce honey or of bees working on spruce in our beekeeping literature. As far as the writer has been able to ascertain this is true only of the Norway spruce. *Picea abies*. Since the Norway spruce is not a native to this country, it is seldom found in considerable numbers except in the vicinity of cities where it is planted freely for ornament. (Fig. 86–87.)

It was at the Ontario Agricultural College at Guelph that the writer first saw the bees working on spruce to any extent. It was about June 12, and the bees were humming through these trees in large numbers. There are hundreds of these trees about the college grounds, and considerable honeydew seemed to be coming to the college apiary from this source. Honeydew is seldom desirable, as it is usually of poor quality and only serves to spoil the quality of good honey. However, this spruce honeydew seemed to be of rather better quality than is generally the case with honeydew, and, as it came ahead of the clover flow, was probably nearly all consumed for brood rearing.

Mr. F. W. L. Sladen, the Dominion apiarist of Ottawa, was present at the college where he was giving lectures at the summer school. He, together with the writer, took much interest in the spruce. For a time we were puzzled to know whether the bees were getting an exudation of sap from the tree, or were in fact getting honeydew. They were working on what appeared at first sight to be buds at the base of the new growth, but which under the microscope proved to be scale insects.

Mr. Sladen took the matter up with the entomological department of the college and the insect was identified as *Physokermes picea.*

Atlantic, Iowa.

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Beekeeping as a Prison Industry

BY O. H. L. WERNICKE.

BEEKEEPING as a prison industry within my knowledge affords no precedent beyond the experiments now being undertaken by Warden Nathan F. Simpson, of the Michigan State Prison at Jackson, under the supervision of the Board of Control, of which the writer is chairman.

Until 1911, Jackson Prison with 700 inmates, was conducted under the so-called "contract system" in making sundry products, including chairs, small implements and other things, with the exception of about 100 men employed in the manufacture of binder twine on State account, authorized by the legislature in 1907.

In 1909 the legislature passed an act prohibiting further contract industry with the expiration of then existing agreements and requiring the employment of all inmates on State account thereafter.

Under the old system the contractors paid the State so much per inmate and obligated themselves to employ a given number for a definite period. In the nature of the case this plan resolved itself into a matter of exploiting

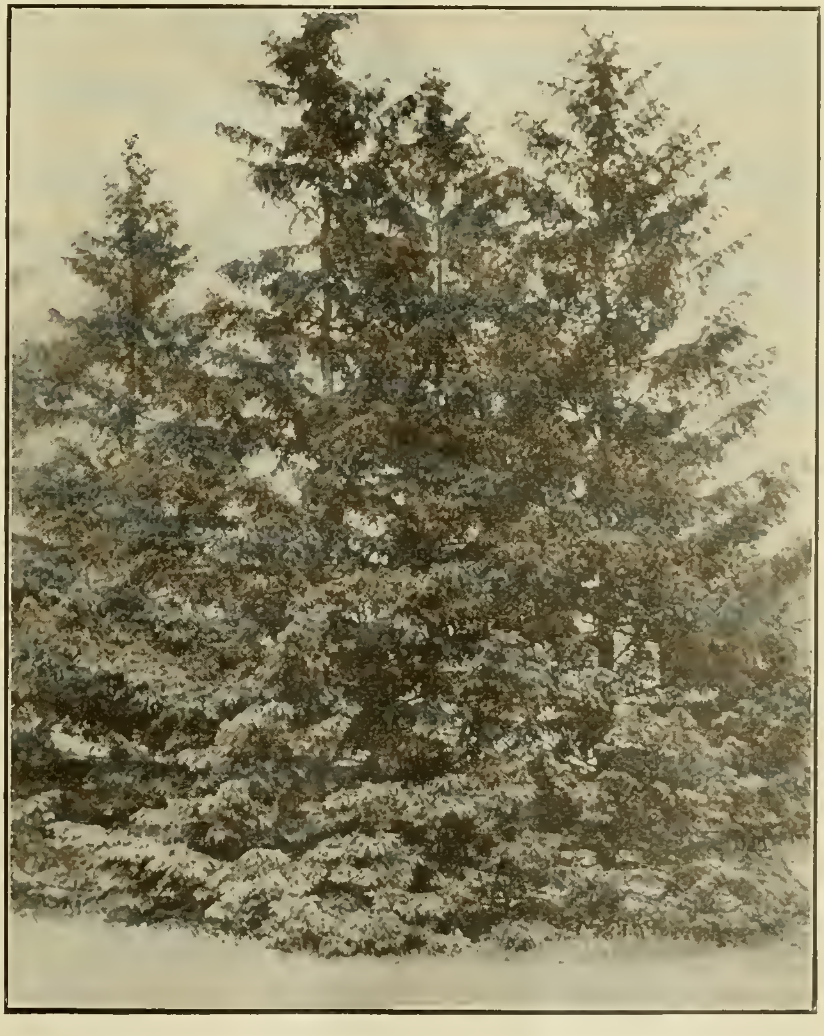

FIG. 87.—A CLUMP OF NORWAY SPRUCE ON THE GROUNDS OF ONTARIO AGRICULTURAL COLLEGE

convict labor for the profit of contractors, resulting in practices neither reformative in principle nor profitable to the State. The present management, by establishing a variety of industries, now provides more useful and reformative employment to the unfortunates under its care with manifest advantage to all concerned; and as a result, an annual deficit approximating $90,000 has been turned into a profit.

There are now over 1000 inmates in the institution who are more than self-sustaining. The management has drawn no State money for current expenses for several years, has accumulated a surplus and is permitting the inmates to earn and receive substantial sums for themselves.

Among the industries carried on are farming, which involves nearly 3000 acres of land, mostly owned by the State, employing several hundred inmates who live on the farms in dormitories or are provided from the institution under proper supervision; but in the main, all farm hands work on honor much the same as free men, and this plan is being extended as rapidly as circumstances permit. The farm industries include stock raising, dairying, chickens, meat, fruit, gardening, and supplies all the food consumed excepting salt, pepper, tea and coffee and some sugar, although sugar cane is raised for syrups used in cooking and otherwise.

Much building, ditching, draining, tiling, clearing, fencing and other permanent work is being done. Most of the tools and much of the machinery used are home-made, including wagons, sleighs, harness, horseshoeing, general repairs, etc. There is an up-to-date sanitary canning establishment through which surplus farm products are preserved and marketed involving huge sums; these include peas, beans, apples, berries, beets, corn, sauerkraut, cider vinegar, jellies, and many other items.

There is also a stone shop where many inmates are employed and become skilled artisans in stone craft, such as making monuments and the like. A tile and brick plant employs a large number, and is supplying high grade building materials for the institution as well as to the citizens of the State.

Then there is the twine plant, which last year produced over 12,000,000 pounds of sisal twine not excelled in quality by any free industry in the world. A chair factory employing several hundred inmates, a broom shop, printing plant, tailor shop and many other activities which go to make the institution very nearly independent of outside industries, including the manifold activities of preparing food, clothing and other necessities for the institution.

As a cap stone to these varied industries and activities there is the prison school and its curriculum devised to facilitate and supplement the practical knowledge gained by work in the vocational industries. This is not only a school in name, but in fact, teaching all grades up to the 12th, and its certificates given under the supervision of the State Board of Public Instruction, admit to the University, Michigan Agricultural College or School of Mines.

With the foregoing in mind, you will grasp the purpose in the minds of the authorities when it was decided to add apiculture to the other prison industries. No industry, unless it is conducted on a profitable basis according to the best standards prevailing in successful free industries, is either instructive or reformative; and therefore fails in its purpose as a desirable State account prison vocation. Whether beeculture will justify our expectations on this basis cannot at this time be foretold, but it is hoped that the members of your association and all other beekeepers everywhere will lend us their helpful support to make it a success, so that the State apiaries at Jackson Prison may become model institutions of their kind, affording examples of profitable beekeeping.

Jackson, Mich.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Cellar Wintering

For years we wintered in a cellar which, left to itself, was too cold for best results with bees. So to keep it near 45 degrees, which at that time was supposed to be the orthodox temperature, we kept coal fires going in the cellar during the coldest weather.

We succeeded in wintering pretty well with this arrangement, too, but when the furnace supplanted stoves it was impossible to keep the temperature as low as 45 degrees, it often going as high as 50 degrees, and sometimes even 60 degrees, though the furnace-room was separate from the bee-room. In order that the bee-room might be kept cooler the outside cellar doors which open into the furnace-room were left open, most of the time, and the door from the bee-room into the furnace-room was left open practically always, so the bees had plenty of fresh outdoor air all of the time except in the very coldest weather.

At first we were somewhat anxious as to how the bees would winter with the furnace. With higher temperature and greater activity they consumed more stores, making it necessary that they go into winter quarters with heavier stores than previously. Since the installment of the furnace the bees have wintered better, coming out in the spring stronger and in better condition. The bees look brighter, the hives and combs are dry, never any wet or moldy hives or combs, and very few dead bees on the bottom-boards, often none. Either the bees clean out the dead or they leave the hive to die on the cellar floor. We no longer know what spring dwindling is; and it surely is a comfort not to have to doctor up weak colonies in the spring.

The question as to why bees winter better in a cellar with a furnace was for years answered by saying that they wintered better because of the greater amount of fresh air in spite of the too high temperature.

Since Dr. Phillips very thorough experiments upon wintering bees, we may now say that bees winter better in a cellar with a furnace, not only because of the pure air, but because of the higher temperature. In his book, "Beekeeping," Dr. Phillips says, page 347, "The majority of beekeepers consider 40 to 45 degrees Fahr. as the cellar temperature, but it is clear that the temperature can usually be raised to at least 50 degrees Fahr. with beneficial results," and on page 353 he says: "In general a cellar temperature of 50 degrees Fahr. or higher, results in a saving of the vitality of the bees."

* * *

Results of Excessive Swarming

In the fall of 1914 we bought six hives of bees and wintered them in a log building where they were sheltered from the winds and snow, but had plenty of light and ventilation.

In the spring of 1915, when we took them out-of-doors, one hive seemed to have lost its queen. The bees of this hive were united with another one.

Some of the colonies swarmed several times during the season, but we lost every swarm. The bees left in the hives very little honey, and this spring some of these colonies were dead.

Here in Marinette Co., Wis., there is basswood, acres of white clover, hundreds of acres of red clover and alsike; wild berry bloom everywhere; also fields of buckwheat. An ideal place, it seems to me, for honey production.

Could you through the columns of your journal give me a solution of this problem? Could there be moth or any sickness among the bees? Is it too late to get a queen for a swarm of bees? [Mrs.] Lucy L. Ferguson.

The trouble was that your colonies "swarmed themselves to death." You should never allow a colony to swarm more than once. It is a difficult thing to prevent prime swarms, but comparatively easy to prevent afterswarms. When the first, or prime, swarm issues, hive it and set its hive on the old stand, setting the old hive close beside it. A week later move the old hive to a new stand two yards or more distant —that's all. The bees will do the rest, for all the field-bees that go from the old hive to gather nectar, will upon their return go to the old location and join the swarm, thus weakening the old colony so much that they will give up all thought of swarming. Neither will this lessen your honey-crop, but rather increase it, for the swarm will store so much the more.

With the pasturage you mention, bees should do splendidly, but they must not be allowed to waste all their energy in swarming.

A queen may be introduced almost any time when bees are in flight, and there is no better time, other things being equal, than near or after the close of the honey harvest.

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Bees Hanging Out—Ventilation

An Illinois sister writes:

Please say what causes bees to hang around entrance, with good ventilation and shade the hottest part of the day. I have a colony that has done this for two summers. They will fill brood-combs with honey, but will not work at sections in supers. They were treated for foulbrood early in the season, but are strong now. This is the second year. Ought I to requeen?

Do you advise the cover of hive to be raised a little for better ventilation on hot days?

Do you advise crossing with other strains of bees? Mrs. V. A.

When bees hang out at the entrance in considerable numbers, it is generally because it is too hot and close for them in the hive, or else because there is nothing for them to do in the fields. You say they have good ventilation, but it is just possible that you haven't as large ideas of ventilation as you might have. We give our bees ventilation by having the entrance two inches deep the whole width of the hive, also allowing ¼-inch opening at the top of the hive at the back end. In the daytime there is rarely any hanging out, even when there is very little to be done in the fields, but in the hottest weather they hang out at nights. It is just possible that more ventilation would help in your case. Raising the cover might help, but sections near such an opening are often slow of completion.

You would probably find that one or more baits in a section-super would be a great help in starting the bees at storing. If you have sections that have been partly filled previously, that's just the thing for a bait. Even any piece of comb, old or new, put in a section in the middle of the super will do.

Yes, it is a fine thing to introduce a fresh strain of blood, provided it is better than what you have already, a thing easily possible in your case, for it looks a little as if the bees you now have are troubled with downright laziness.

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Polk County Association Meets

The Beekeepers' Association of Polk Co., Iowa, held its annual summer meeting and picnic at Union Park, Des Moines Friday, July 28. The following program was given, after which a business meeting was called. At this meeting the officers were elected for the coming year and routine business attended to:

Addresses by A. L. Clinite, of Des Moines, and Hamlin Miller, of Marshalltown. Readings, Misses Alice Hoare and Vasie Crow, of Des Moines. Folk games by children. Demonstrations were given in queen clipping, shaking to prevent swarming, and extracting of honey.

Belle McConnell, *Sec.*

The Social Side of the Honeybee

One cannot ride a hobby horse for long without offering a lift to wistful pedestrians or being overtaken by other riders on similar steeds, until quite a company is collected. In such wise the Los Gatos Bee Club was formed, and now our various steeds are engaged in a friendly race along the by paths of bee-culture, of which the study of honey flora, queen-rearing, increase in colonies and honey production are among the most popular.

The Club is somewhat loosely organized, its members being called together now and then by its one officer, Dr. Annie M. Anderson, secretary. There is no regular place of meeting and no financial obligations except to be present on the rare occasions when the hat is passed for postage. The Club, judging from the meetings which in fair weather are held at the apiaries of the different members, is a sort of clearing house for ideas either original or gathered from bee literature, as well as the weird and wonderful experiences of the members.

One enthusiast with an artistic eye, proudly exhibited a brood-frame filled with pollen in which the reds, blues and yellows had been blended by the bees into a mosaic of the most exquisite pastel shades; another can hardly make and paint hives fast enough for his increasing colonies; another has taken 100 pounds of comb honey from a single hive—a phenomenal yield in a locality that has no special honey flows, but where, on the contrary, the nectar is secreted in small quantities from a variety of plants and shrubs both cultivated and wild, almost every month in the year; and still another member has reared a number of fine Italian queens.

At the June meeting of the Club a practical demonstration of queen-cell grafting was conducted by Dr. Anderson, who, by the way, has discovered a safe method of approach to the most belligerent colony. She merely says, "Now, little friends!" and calmly proceeds to business. Other members are trying out the formula.

C. D. Stuart.

Clearly, this Club is not a one-man affair, but it looks a little like a one-woman affair, having a woman for its sole officer, and evidently depending largely upon her for its inspiration. It is easy to believe that when the Club gathers at the call of the leader a good time is had, baby and all.

It may be well to mention that Dr. Miller, as well as the conductor of this department, has for some time been using a hat very like the one worn by the lady in the center of the picture, only we do not have the veil sewed to the brim of the hat, but the veil is the common form of bee-veil, an open bag with an elastic cord at each opening, and the veil drawn down over the hat, the elastic cord fitting close at the place of the hat-band. When worn without the veil, the brim may be turned up, when the hat gives up its dejected appearance and looks altogether like a different hat. Cost 25 cents.

MISCELLANEOUS NEWS ITEMS

Better Queens Produce Better Bees.—Stencil Bulletin No. 11, of the Extension Department of the University of Wisconsin, under the direction of Prof. H. F. Wilson, declares that successful beekeepers have found that pure bees, better queens, clean honey, neat packages bring more honey, less disease, better price, larger profits. We quote from the bulletin as follows:

The most important individual in every colony of bees is the queen. Why? Because upon the queen you have depends the kind of bees you will get. Also, she is the producing factor, and the strength and vitality of each colony depends upon its queen.

We have asked many beekeepers, "What, in your opinion, are the requirements for a satisfactory strain of bees?" The answers received may be summed up:

Bees that will gather the maxium of honey and produce well-filled cells with clean, white combs and cappings; bees that build few queen-cells and do not swarm excessively; bees that do not require too much care; bees that are gentle and do not run on the combs; bees that keep their hives clean and do not smear everything with propolis (bee glue); practically all of these answers include health, vigor and resistance to disease.

BEES, TOO, CAN BE BRED FOR PRODUCTION.

Is it possible to secure a strain of bees that have all of these good qualities without undesirable traits? Yes.

Through breeding and selection, the characters of plants and animals can be changed to meet any desire of the breeder. No character, whether it be desirable or undesirable, is so strong but that in time it may be improved or eliminated.

At present there are perhaps a dozen or more strains of the common honeybee, each one having developed under conditions that have given rise to considerable variation both in color and temperament. Phillips, of the United States Department of Agriculture, mentions four of these as having some desirable characters; the Italians, Germans, Carniolans and Caucasians. He has found that it is the almost universal verdict of American beekeepers that the Italians are the best.

WHY KEEP MONGREL BEES?

Settling upon this strain as the one having the most desirable characters, the next step would be to improve existing stock so as to approach more nearly to the qualities of the best strain. Fortunately, some of our queen-breeders have carried on a more or less selective process and, in general, both the leather colored and golden Italians have improved.

However, we cannot find that much, if any, real scientific work has been done in connection with the different strains, and for the most part, bees are just bees, sometimes blacks, sometimes hybrids, and frequently Italians. As a result of these conditions, mongrel stock is to be found to a more or less extent in all sections of the country, and it is a continual menace to the industry.

Too much stress cannot be placed upon getting rid of queens in weak or sickly colonies and on providing new queens for colonies that are not resistant to disease. Similarly, a new queen should be provided for a colony that is cross, or in any way undesirable. The beekeeper who has queens that are strong and vigorous, and whose bees are good producers, should use her daughters in place of less desirable stock.

California Honey Sale.—The sale, June 28, by a Pasadena apiarist of 32 tons of extracted honey at 7½ cents, doubtless records the high-water mark of both production and sale for this year.—*Western Honey Bee*, July, 1916.

A Better "Bee Cutting."—The usual bee tree party simply robs the tree late in the fall and leaves a helpless but useful swarm to starve to death. It is much better to have the "bee-cutting" much earlier in the season when the swarm may be transferred to a good hive, moved home, and allowed to store enough honey to keep itself through the winter. If there is not a favorable fall for honey gathering, it may be necessary to feed this swarm through the the first winter, but a good swarm is well worth it.

Students at the Missouri College of Agriculture were recently shown how to do this. They were equipped with an ax, a saw, a few bee veils, a good hive, and a basket of tools. The basket contained a few feathers, a buggy-spring hive tool, a putty knife, two butcher knives, a few slender wood splints and a smoker.

After the tree was cut the boys sawed into the trunk just below the knot-hole used by the bees as an entrance and made another cut about eight feet above the first one and a third cut about half way between these two. The bees were then transferred to the hive and the hive moved to this permanent location in accordance with directions found in Experiment Station Bulletin 138, entitled "Farm Beekeeping." — *Press Bulletin*, University of Missouri.

Honey Extractors at the Royal Show, Manchester, England. As usual the honey extracters were a puzzle to those who are entirely ignorant of beekeeping, or appliances for carrying it on. We not only heard one again described as a churn (one man remarking "it would soon fetch butter," as it was "geared up to 90"), but one man enquired of an attendant if they were "fer weshing (washing) pertaters." A member of another group declared they were for mixing "dooah" (dough). Said he, "They hev these sooart o' things fer mixing dooah, they put in t' flaar an' watter an' barm, then thurn t' handel an' mixes 'em aul oop" "Nay," put in another, "they're weshing machines. "Nay," was the reply, "they cuddn't get a blanket in 'em sittha."—*British Bee Journal*, July 6.

Colony on Scales.—Mr. L. V. France, assistant in beekeeping at the University Farm at St. Paul, Minn., sends us the results of the weighing of one colony on scales during 31 days, from June 14 to July 15. It shows an increase of weight, maximum of 14 pounds 8 ounces on July 11, with an additional gain, instead of the usual loss of a few ounces, during the night, owing to the fact the colony was daily weighed at 7:30 p m., and that on that day the additional increase of weight after 7:30 p.m., was honey brought until nightfall. The total net gain of the colony during the 31 days was 122 pounds, or nearly 4 pounds average. The heaviest net loss during a single night was 2 pounds 6 ounces, out of 11 pounds 6 ounces gain during the preceding day, The colony, at the end of the time, occupied five Langstroth 10-frame bodies.

Beekeepers could have a great deal better idea of the honey flow if each apiarist kept one of his colonies on scales and registered the daily gain or loss.

Tri-State Field Meet.—The second Tri-State Field meeting of the beekeepers of Illinois, Wisconsin and Iowa was held in Union Park, Dubuque Aug. 1 and 2. The meeting was called to order by Mr. E. J. Baxter, of Nauvoo, Ill.

The excursion and luncheon given by the Commercial Club of Dubuque on the steamer Sidney, were greatly enjoyed by all who were present. This was given on the first day.

There were about 90 present, and 17 new members were secured for the Iowa Beekeepers' Association. The slogan for this association is at least 500 members enrolled by the time of the December meeting at Des Moines.

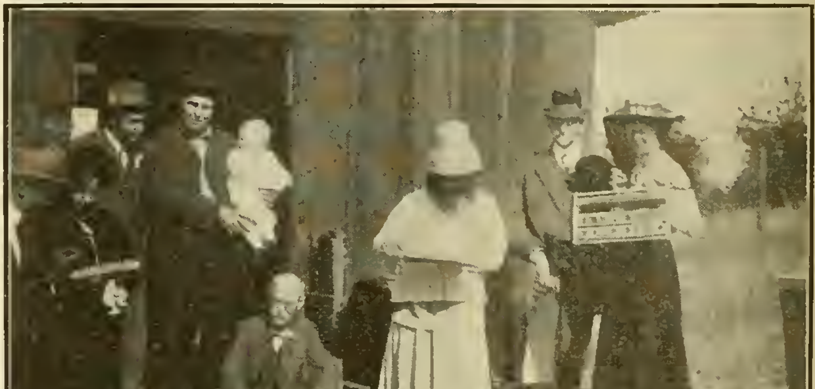
We were greatly honored by having with us Mr. C. H. Bocock, from England, who is the expert in apiculture of the British Beekeepers' Association; Dr. Phillips, of Washington, D. C ; Inspector N. E. France, of Wisconsin; Mr. Kildow, of Illinois; Mr. Blaker, of Minnesota; Mr. Pyles, of Illinois; and Mr. Elmore, of Iowa. Prof Jager and his assistant, Mr. France, from the Agricultural College of Minnesota, were present and took part in the discussions.

Mr. Kildow took charge of the question box.

Mr. Bocock gave a very interesting talk on the Isle-of-Wight disease. He told of the spread of the disease by the wind causing the bees to drift, and of the great destruction of the bees over all the British Isles. It is certainly to be hoped that the disease in its malignant form will stay within its present bounds. It is not sure that any cases of the disease have been found in this country. The exact cause of the disease has not been found.

The question of weights and the price of honey were well discussed as was also the foulbrood situation. There seems to be a difference of opinion in regard to the smell of European foulbrood, and it is quite certain that it has a distinctive smell of its own, differing from that of the American foulbrood.

A motion by J. W. Stine was made and carried to have a committee of one appointed from each State to bring before the Inter-State Commerce Commission the urgent need of the same classification of freight rates in the



JUNE OUTDOOR MEET AT LOS GATOS, CALIF.—(Photo by J. R. Douglass.)

western States which is given in the eastern States.

A motion by Mr. France was made and carried to continue the present organization to be known as the Mississippi Valley Beekeepers' Association, and meet again next year some time during the first week in August.

The committee named to make arrangements for the next meeting was Mr. N. E. France, Prof. Jager, Mr. Kildow, and Mr. Hamlin B. Miller.

J. W. Stine, *Sec.*

An Announcement.—It has been the dream of beekeepers for many years to have honey so widely and thoroughly advertised that it would become an article of common everyday household use. This dream is now crystallizing into substantial form. The United Honey Producers are arranging to have the food value of honey and domestic use taught in the schools of the United States. Obviously there is no quicker way to popularize it than to educate our future housekeepers to use it in the best manner.

The school officials have been asked if they would assist in this, and in almost every instance they have agreed to do so, if suitable bulletins are supplied to the schools by the beekeepers. The United Honey Producers are arranging to do this, and will print them in quantities to supply all the schools.

This is a great opportunity, and as the editor of the Western Honeybee declares, "A grand idea, and no one interested in the production of honey can afford not to endorse it."

We will take it for granted that you do endorse it, but we want you to say so. Write to your vice-president or to the secretary and tell them so. It is planned to have one or more beekeepers in each county, and more when possible, to represent the United Honey Producers, and be ready when called on to give simple demonstrations before the pupils, to supplement the instruction and for other necessary work in connection with the United Honey Producers.

This is a matter of general importance as well as personal advantage to the county members, as it will bring liberal compensation to them in the way of prestige as representatives of the National organization. For the present these positions will be filled by volunteers, later they will be elective or be appointive.

The United Honey Producers will specialize on this policy, and concentrate its efforts in pushing it to a successful culmination. When its present plans are successfully realized, then it will take up some other things that are needed and carry them out. The discipline and organization that this campaign will bring will make possible other things.

Detailed information can be obtained by writing to your vice-president or to the secretary. Geo. W. Williams, *Sec.*

Apicultural Assistant (Male) $1400-$1600.—The United States Civil Service Commission announces an open competitive examination for apicultural assistant, for men only, on Sept. 20, 1916, at the places mentioned in the list printed hereon. From the register of eligibles resulting from this examination certification will be made to fill two vacancies in this position in the Bureau of Entomology, Department of Agriculture, for duty in the field, at salaries ranging from $1400 to $1600 a year, and vacancies as they may occur in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill a vacancy by reinstatement, transfer, or promotion.

The services of an apicultural assistant are desired in connection with extension work about to be undertaken in the South.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects	*Points*
1. Practical questions	40
2. Thesis (to be delivered to the examiner on the day of the examination)	20
3. Education and experience	40

At least two years' experience with apiaries of at least 100 colonies, or two years' experience in apiary inspection service, or two years' experience teaching bee-culture in a college, is a prerequisite for consideration for this position. For particulars, blanks and nearest place of examination. Address, U. S. Civil Service Commission, Washington, D. C.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
Dr. C. C. Miller, Marengo, Ill.
He does NOT answer bee-keeping questions by mail.

Different Kinds of Italians

In looking over the Bee Journal I find mentioned bright Italian bees, three-banded goldens and leather colored ones. Is there any difference in them? Indiana.

Answer.—You have probably not often read of three-banded goldens. Goldens are generally supposed to have five bands. Perhaps leather-colored have the general preference. "Bright" may apply to bees lighter-colored than the leather-colored, although "bright" is often applied in a general way.

Cleaning Old Combs—Drone-Brood—Feeding

1. We bought a pound of bees and a young queen along in May. We put them in a hive of old combs in which bees had dwindled away during winter. There is some brood in the old combs that seems to be dead and dried up, and bees don't seem to work on it. Do you think it would be all right to uncap it and see if bees will work on it that way? What do you think we should do with this hive? They have some brood, but very little. We have tried feeding them from the top with entrance feeders, but they do not take it up very tast; it takes them about a week to use a quart. We also gave them four or five frames of sealed brood, which came out all right.

2. In our brood-frames we have cells that project ⅛ to ¼ inch beyond other cells; they look like worker cells; otherwise what are they?

3. What is a good plan to make bees take sugar syrup? Pennsylvania.

Answers.—1. It seems a little difficult to understand how there should be sealed brood in a hive in which a colony died in winter, when generally there is no brood present. However, the bees should be expected to clean it out, but not so very much ahead of their needing it; that is, a weak colony need not be expected to clean out combs a considerable distance from their brood-nest. But it will be a help to them for you to uncap the dead sealed brood, and even to dig it partly out. Yet generally bee-work is cheaper than man-work.

When you gave four or five frames of sealed brood to a pound of bees, it is quite possible that there were not bees enough to cover the brood properly, and that much of it perished, for four or five frames well filled with sealed brood should make a pretty colony of itself. There is probably nothing you should do more to help along, for when honey is yielding as it was at the time your letter was written, feeding is not at all needed, and will hardly do any good.

2. The cells that have their cappings projecting contain drone-brood, and if there is much of such work it shows the work of a defective queen.

3. It is no trick at all to get bees to take syrup when weather is not too cold for them to get at it, and they need it. But when they are getting honey from the flowers they care little for syrup made with sugar, and feeding at such a time is needless. When feeding at a time when bees are getting nothing from the fields, it is important to have the feed so near the brood-nest that the bees will not be chilled in getting to it. The warmer the weather the farther they can go for it.

Langstroth Hive—Increase—Not Working in Super

1. Is the hive patented which is made with a porch or portico in the front, grooved where supers and top fit on and having bonded ends? Would it be lawful for us to make some, for our own use, over the same pattern, with some changes? Could we sell a few of them?

2. We have 12 colonies and wish to increase from these. As yet we have had no swarms to issue What is the best way to make them swarm without using extra queens or cells?

3. How can you tell that a swarm will issue soon, without examining the hive?

4. What would you consider an average swarm from an 8-frame hive?

5. What is a good way to get the bees to go to work in the super? We are running for comb honey, and have not been able so far to get them to work in the sections.

6. Is the enclosed queen, which I killed while trying to transfer her colony, a full-blood Italian or only a hybrid? How can you tell? Oklahoma.

Answers.—1. The hive was covered by the Langstroth patent, which expired years ago, so you are at liberty to make, use, and sell all you like. But you will do well to leave off the portico, which is discarded nowadays because it makes a fine refuge for spiders.

2. It may tend to hasten swarming if you strengthen the colony by giving brood or bees, or both, from other colonies. Also to keep their room limited and to keep their entrance rather small. But you can take

the matter into your own hands, and divide artificially. Full instruction for this will be found in Dadant's Langstroth and other good bee books.

3. You can't. You can, however, make something of a guess if the bees hang out somewhat idly when other colonies are busy at work.

4. At a rough guess, about a peck and a half. This while the bees are loosely clustered; for when they settle down quietly in a hive and cool off, the cluster will shrink in size.

5. Put in the super a section that has been partly or wholly built out. Even any old piece of comb will do.

6. She looks like a nice Italian queen, but you never can tell from looks. You can decide only from her worker progeny. If they all have three yellow bands you may decide the queen is pure.

Keeping Sections of Honey

What I am most interested in at the present moment is the best method to keep section honey. Ever since I have kept bees I have fumigated with sulphur about ten days after I took the honey off, which makes an endless job Is there any shorter way?

Prospects were never better, but a good shower would help the white clover. Linden is just in bloom, but is about three weeks late for this locality. MISSOURI.

ANSWER—Years ago I sulphured my sections soon after taking them off the hive, and then again about two weeks later. For years I have not fumigated them at all. The only thing I have done to make the difference is to get in Italian blood. Like enough there is too much black blood in your bees, and blacks are inferior at keeping the bee-moth at bay.

Eggs Don't Hatch

On May 6 a queen hatched, and on the 12th she began to lay quite freely, but the eggs do not hatch. I have failed to find the larvæ in any stage at any of the frequent examinations. The queen is a fine looking one and quite active. The eggs are deposited very regularly and there is plenty of honey coming in. What is the matter? KANSAS.

ANSWER.—I don't know the answer. I had one queen of the same kind, and I think only one, and I have read of some others. The eggs just don't hatch, although everything appears all right, and I don't know why. Fortunately you're not likely to have another such case in your lifetime.

Cleaning Old Combs—Building Up—Swarming

1. How can old combs having larva and dead bees in them be cleaned up so they can be made into foundation?

2. At the beginning of the honey flow, before my bees started in the supers, they were very gentle, but after they started work in the super they would sting me, when I opened the hives despite the smoking I gave them. Is there a reason for this?

3. I have a few small hives of bees which I would like to build up. If I put frames of brood in them from larger colonies, would it be safe to add also the adhering bees?

4. I have kept my bees from swarming so far by cutting out queen-cells. I would like for them to put up all the honey possible, and then swarm. How soon shall I stop cutting out queen-cells to let them swarm in time to gather stores for their winter use? MISSOURI.

ANSWERS.—1. Clean them up what you can conveniently, brushing off the dead bees, and then melt up dead bees and all; and when the melted mass cools, having plenty of water with it, you will find the impurities separated from the wax.

2. I don't know why there should be the difference, but I know that sometimes bees are much worse at stinging than others Of course, when the flow stops suddenly, and bees have nothing to do but to defend their homes, we expect them to be cross, but sometimes they are crosser with a full flow on than they are at others. There seems to be more complaint than usual this year.

3. You can give the adhering bees if you do not give too many at a time. If, for instance, you have a weakling with only two frames of brood, and you give it two more, with adhering bees, you will jeopardize the queen; but you may feel pretty safe if you give only one brood with its bees. The point is that in giving the bees they should not be more than half as many as those already in the hive. But if you make the bees queenless two or three days previovsly, then you may add all you like.

4. Don't you worry; those bees will swarm in time enough in spite of all your cell cutting. There may, however, be some exceptions, and what time you should stop cutting depends on how late your flow is. In some places there are years when a swarm in July would not store enough for winter use, while in others a September swarm might make good.

Uniting—Artificial Increase

Have just read your book, "Fifty Years Among the Bees," and think it is the best book I have ever read. What would be your opinion of uniting swarms coming off at the beginning of the honey flow and keeping the number of colonies good by artificial increase? NEW HAMPSHIRE.

ANSWERS.—I suppose your idea is to unite two swarms so that the combined force will be stronger for storing. If your bees cannot be persuaded not to swarm then you will gain in surplus to unite two swarms, for the combined force will store more honey than would the two kept separate. Exception, however, must be made in places where there is a heavy flow late, for in such places, especially if the swarming be early, you will get more surplus by keeping the swarms separate.

A Boy's Questions

1. When transferring bees from a box to a hive, and when adding the bees in the old box to the hive, would an entrance guard be necessary so as to keep the queen out?

2. Would a queen-excluder be needed for producing comb honey?

3. Last summer I heard a noise in the hive that sounded like burnt paper. Do you know what it was? SUBSCRIBER.

ANSWERS.—1. No; I don't know of any reason why you should want to keep the queen out.

2. No, I never use any. But if no excluder is used it is quite important to have the section quite filled with worker foundation. Otherwise the vacant space will be filled with drone-comb, and the queen is likely to come up and lay there.

3. It was probably nothing but the noise of the bees. It is interesting to put one's ear against a hive in the still of the evening and listen to the various sounds made by the bees. Some of them sound like little squeals, and some a good deal like the crackling noise of burning paper.

Miscellaneous

1. When you take off your comb honey supers, and the season is about over, do you put on other supers? The swarms are too large to shut in the one story, and it seems that if given a super many of them would gnaw the full sheets of foundation down

2. I shook three of my swarms that had cells capped over on empty or wired foundation, leaving an outside comb on each side, then set the brood on top over the queen-excluder for three or four hours I then carried the top hive away and gave them a queen-cell. In a few days they swarmed for three days in succession They came back the first and second time, but the third time they would have gone if I hadn't sprayed water on them. I then put on a drone-trap, and a few days after I saw a ball of bees like a walnut on the outside of the trap. I examined it, and found the young queen trying to get into the hive but couldn't, so I clipped her wing and let her in How she got out through the trap I don't know. Why did they swarm that way; they had two full sheets of foundation in the 10-frame hive that hadn't done any work?

3. One swarm had cells started, so I cut them out and filled the hive with full sheets of foundation with the exception of one frame with brood, which I put in the middle with the queen, then put the brood on top over the excluder and in eight days cut out all cells. In a few days they swarmed, but as the queen was clipped they came back. I carried the top hive away and gave them a cell. Why did they swarm? Was it because I didn't put the queen below soon enough?

4 I have a swarm that was shaken early in June, queen clipped and brood taken away; they worked in the sections, but today they swarmed, making the second time they had tried it. Of course, they came back What is the cause, and will they keep on until they kill the queen?

5. If they supersede their queen, when do they generally do it, and do they build more than one cell?

6. After a cell is capped, how long is it until the prime swarm issues?

7. Three of my 10-frame hives are painted a dark green. One had a very large swarm of hybrids with 56 sections nearly ready to take off, so I gave another 28 on top and lifted the bottom or tilted the hive up to look for cells and found none. About 2:00 o'clock in the afternoon and about 7:00 o'clock in the evening I found honey over part of the running-board with a pool on the ground. I examined them and found one outside the comb about half melted down. The hive was setting in the hot sun with a shade-board on top, and excelsior cover on top of the cover. Bees clustered out in front clear to the top of the third super, some drowned. The ⅞-inch entrance was wide open. Was it because of the dark paint or my working with them that caused this? Other hives being within six feet of them it must have melted in about an hour, or I should say three hours, after I left them or there would have been robbing started; but nothing of the kind happened.

8. Is it right to shake bees through the queen-excluder in hunting for the queen? It seems that part of my queens can hardly be found to be clipped in any other way.

9. How do you keep the wind from blowing your hives over where they are tiered as high as the bee journals picture them at times? OHIO.

ANSWERS.—1. No supers are allowed on the hives after the flow is over. If a colony is so large that the hive is too small for them, they can stay outdoors. Won't hurt 'em a bit. As soon as it is too cool for them outdoors they can crowd into the hives, and there will be plenty of room for them.

2. If I understand correctly, you set the brood-combs with a full complement of bees on a new stand. Their first business was to start cells, even if you had already given them a cell, and being strong they were ready to swarm as soon as the young queens matured. The swarms were practically afterswarms, just as would naturally be expected, for in the few days intervening before the virgins were ready to emerge the colony had been becoming stronger all the time. If, instead of leaving the bees over the excluder a few hours, you had left them for a week, there probably would have been no swarming.

3 I don't know. With the queen and only one brood below excluder I should not expect swarming. But bees sometimes break all rules.

4. They may keep on until the queen is killed, or they may give up. You might keep the queen caged in the hive 10 days, then kill cells and free the queen. Of course, however, that would not tend to strengthen the colony greatly.

5. Superseding is generally done toward the close of the season. Only one cell may be started or there may be two or more.

6. The natural thing is for the swarm to issue as soon as the first cell is sealed.

7. Hard to say. The dark paint and your disturbing the bees may both have been to blame, and it may also be that ventilation of the surrounding air may have been too little on account of surrounding shrubbery or buildings.

8 Yes, such a practice is considerably in vogue.

9. Nothing is needed to keep them from blowing over. My supers are often piled six to eight high, with nothing put on top, and not one has ever blown over. There may be localities with such very strong winds that it is necessary to pile stores on top.

Swarm Control

My apiary consists of 30 colonies, and I have only had one year's experience. I am running for comb honey. Could you give me some advice on swarm control? I do not like to have any more increase. All my queens are clipped. Illinois.

Answer—The most common means used to prevent swarming is called shaking a swarm. Look through the hive every week or ten days, and when you find queen-cells started take away all brood but one. The brood taken away may be used to strengthen weak colonies, or wherever it will do most good. If you want it to make a new colony, you must take with the brood enough bees to keep the brood from chilling. It may be better to leave the brood for a week or ten days over an excluder, leaving the queen with her one brood below the excluder.

It may do no harm to mention that a satisfactory way of preventing swarming has been one of my most difficult problems, and it may be profitable for you to study the different plans I have tried, as given in my book "Fifty Years Among the Bees."

Swarming

1. I hived a swarm of bees about June 6. Will those bees build queen-cells soon and is it likely they will swarm?

2. After my bees quit swarming and I know that my bees have queens, would it be all right for me to cut the queen-cells out, and if so, would the bees build them again soon?

3. Is a queen and drone trap successful or not, and when a swarm issues will they hang on the hive outside or will it cause them to go back in? Illinois.

Answers.—1. Having sent out a prime swarm June 6, it would be nothing strange for a second swarm to issue about eight days later, and if they didn't swarm within 16 days you would not expect any afterswarm. The colony is not at all likely to start cells or to swarm again. The swarm may start cells for superseding, out not for swarming.

2. There will be no need to cut out cells in the old colony, and to cut them out in the swarm would only interfere with superseding the queen

3. A trap will catch the queen, and so prevent the swarm from leaving, but if left on more than two weeks or so after issuing of the prime swarm it would hinder the young queen from going on her wedding trip, and so bring disaster to the colony. Yes, when the queen is caught in a trap upon the issuing of a swarm, the bees are likely to hang out if the weather is hot.

Replacing the Queen

1. I bought from a queen-breeder a queen as advertised by him, and the drones are very dark, some having only one band, and none are light like Italian drones I have seen before.

2. On June 26 I found the queen dead on the entrance-board. On examining the frames in two days I saw three nice large queen-cells, so I did not send for a queen. What, in your mind, caused the death of the queen? She had done fine.

3. I got a two frame nucleus and have taken two one-frame nuclei away for increase, and they (the parent hive) have filled nearly half a super now and no queen since June 26 until today a virgin will hatch. Is that very good?

4. Now, if this virgin mates with these dark drones will the bees be three-banded like the ones from the dead queen (she proving to be purely mated)?

5 There are black bees one-half mile away (bee line). Will they be as apt to mate with my queen as one from my own yard? New York.

Answers.—1. You cannot judge by the drones. Some of the best Italian stock may have dark drones, especially if they be of the leather-colored variety that so many prefer. If the workers show the three yellow bands, it doesn't matter about the color of the drones. The queen also may be quite dark, so long as the workers are all right.

2. I don't know. It is just possible that she was in some way injured the last time previously that you opened the hive, or that the bees balled her on that occasion, a thing that sometimes happens.

3. You did well, and yet the loss of the queen would show more later on.

4. Yes, I would expect the worker progeny to be three-banded.

5. There is a likelihood that at least half of your virgins will meet your neighbor's drones.

Leather Colored—Three Banded

I would like to know the difference, if there is any, between the leather colored and the three-banded Italians? Minnesota.

Answer.—The name "leather colored" applies to that type of Italians whose workers are of a hue somewhat like leather that is tanned without being colored. Their workers are three banded as well as the workers of the light-colored Italians.

Introducing a Queen-Cell

I will explain to you the circumstances that lead to the question: I had a very strong colony with a mismated queen. She was on a frame when I shook the bees off I noticed her down on the bottom-board a few minutes later. She was drawing her abdomen in and out, giving her the appearance of panting. Ten days later she was not to be found, there were no eggs or unsealed brood, and the cells had been started, so that I considered the colony queenless.

I destroyed the cells and put in a frame of brood that had a nice cell on it. This frame had been raised above the excluder in my best colony, seven days before. Ten days later there was a big swarm cast at 2:00 p m., and another one at 4:30 p.m. They were looked for, but not found. I looked through the hive and found a queen, evidently young, judging by her speed and shyness, also two more cells, which I cut out. Now, I am wondering how to account for two swarms and a queen left, also whether it is ever safe to requeen a strong colony by giving a cell. You speak of this condition on page 108 of "Fifty Years Among the Bees," but I don't think you quite answer this question there. Would all have been well if the cell had been on brood that had been ten days above the excluder instead of seven, or would they have swarmed anyway? New York.

Answer.—It is fairly safe to introduce a queen-cell into any colony which is queenless and has no unsealed brood. I say "fairly safe," because it occasionally happens that when the virgin goes out on her wedding trip the bees swarm out with her, and some have reported that she does not always return.

The cell you gave was on a comb that had been over an excluder seven days. In all probability the comb contained brood in all stages down to eggs that had just been laid at the time the comb was put over the excluder. So there would be present brood not more than four days old, young enough to be changed into queen larvæ, even though a four-day larva will not produce a queen of the best grade. Nothing strange, then, that a strong colony with several young queens should do some swarming. If the comb has been over the excluder ten days, as you suggest, possibly if only eight days there would have been no trouble.

One-Half Story Hives

1. I am in a locality with an intermittent flow and a long season with conditions such that all early swarming colonies will prepare and swarm again in about five or six weeks, as will the parent colony; also the natural increase is about four to one regardless of adding comb-honey supers.

I am using 8-frame hives (too small undoubtedly for this vicinity). An article in June 1st Gleanings outlines what seems to be an ideal plan, using 1½ stories as a permanent brood-chamber, this being equivalent to 12 frames regular.

It seems that where colonies naturally swarm twice and construct three new sets of combs with a surplus, one could easily maintain a 1½ story brood-chamber manipulated as described with less swarming and more surplus and less manipulating. Would the depth be detrimental to securing section honey, and what has been your observation with a 1½ story permanent brood-chamber.

2. In a recent answer to questions in the American Bee Journal, you mention doubling up on swarms, hiving the second, third and fourth swarms with the first. What about the queens in this case? Do you mean to run in the swarms, queen and all on a previously hived swarm, or should the queen in the hive be killed before hand? Beginner.

Answers.—I have not experimented with 1½ story hives, but would not expect any difficulty with supers for either comb or extracted honey over the hives of such depth. It may do no harm for me to suggest that if you do not care to procure the half stories you can accomplish the same end by using two full-depth eight-frame stories, having only four frames in the lower story, using dummies in the vacancy. You could also experiment to see whether you would like five frames in the lower story better than four.

2. Yes, no attention is paid to the queens, they can settle their differences to their own satisfaction. It might be mentioned that sometimes an afterswarm is returned to the parent colony as often as it swarms. If an afterswarm is hived in a hive or box, and returned to the old hive 24 hours later, there will generally be no swarming. For when the swarm is kept separate for 24 hours, or even over night, the likelihood is that all virgins in the cells in the old hive will be allowed to emerge, and they will fight until only one is left.

Bee House—Cypress Lumber

I am starting into the bee-business for the second time with frame hives. I have a beautiful little grove not far from the house, say 150 steps with 16 acres pasture in front and a clear running spring and fresh cool water not far distant. I have only three colonies now, but want to increase to about 25 or 30, and I would like to put my bees or my hives in this little grove, but that would mean no honey for me, for men and boys steal honey here.

Now what I want to ask you is, can I keep my bees in a house? Can I put up a house say 12x20x8 feet and leave a hole just in front of each hive for a bee entrance, say ⅝x6 on the south side of the house, and on the inside have my hives side by side, so no bee can get in from outside; have alighting-board outside 5 or 6 inches wide all along the side, just under the bee entrance, and it covered over with a plank a foot wide and only about 4 or 6 inches above the alighting-board, all painted nice and good. Then have holes at the top of the wall for bees to escape from house when I would be taking honey from supers. The balance of the house I could use for work and store-room. My hives would then be in the dry at all times, no damage from rain or hot sunshine, and honey and all under lock and key. Besides, I would have a nice and clean house for all things pertaining to beekeeping, all sealed up bee tight. Would a house built this way be practicable, and could I have a row of hives on the north side of the house the same as south side? I would prefer them kept out in the shady grove but for robbers. Could have plenty of light from windows in east end and on north side of house.

I have some cypress timber and there is a sawmill near at hand. I aim to have enough timbers sawed into plank suitable for making brood-chambers and supers.

Don't suppose there is more than 250 or 300 colonies in this county. After this year I aim to buy queens. Will you tell me about cypress lumber for hives and supers, and give sizes of hives and supers inside and outside measurements, or would it be best for me to buy one eight-frame hive and one ten-frame hive? I have eight-frame hives.

What length should I have saw stocks cut at stump, so I would have no loss, or the least loss from cutting sides and ends?

IGNORAMUS.

ANSWER.—Yes, you can keep your bees in a house as you propose, the entrances being so arranged that through them the bees can get into the hives from outdoors, but can never get into the house except when the hives are opened. I am afraid, however, that you would change your mind about such a house being nice and cool in a hot summer day. A good many years ago such houses were advocated quite strongly, and some still advocate them, but most have given them up.

You seem to want a house to keep your hives safe from thieves, and I cannot help wondering why you do not keep them close to your house instead of 150 steps away, for that distance would cut no figure with the bees, and it would be inconvenient for you to go that distance.

Cypress lumber is all right for hives, but I am afraid I don't know enough to answer your questions as to measurements. Although I have put together a great many hives, I know little about measurements, having bought the stuff from the factories as a matter of economy. You will do well to have at least one hive as a model to pattern after.

Pollen

When a frame is full of pollen and the bees have no use for it, what should be done with it? VERMONT.

ANSWER.—Generally the best thing is to leave it in the brood-chamber for the bees to use out as they want it. I don't know, but I think that when bees have a stock of pollen on hand they gather less. I have known pollen to be cleaned out of combs put in the extracting chamber. It is possible that there are places where the bees store more than they can use, and then there may be nothing better than to melt up the combs

Hiving a Swarm

As per instructions you gave me in the April number of the American Bee Journal, I have transferred the first colony that swarmed.

During the three weeks waiting for the brood to hatch, none of the bees seemed to go to the new hive, all remaining with the old one. Yesterday I drove them out into the new hive, putting the queen in, too; today they are quiet. The old hive had quite a lot of young brood, but not much honey.

Did I do anything wrong? ARKANSAS.

ANSWER.—I am a bit puzzled to understand the case. You say the bees remained with the old hive during the three weeks waiting—something unusual. It is explained, perhaps, when you say that at the end of the time you put the old queen in the new hive. If the old queen was in the old hive all that time, it is no wonder the bees clung to it, the only wonder being that any bees at all would stay in the new hive. Ordinarily the old queen would be with the swarm at the time of hiving, and I don't understand how you managed to leave her in the old hive. Also the brood would ordinarily be all hatched out at the end of three weeks, but you found brood present, a thing not at all strange if the old queen remained in the old hive. The likelihood is that the queen will be with the swarm in your future experience when all will be straight.

REPORTS AND EXPERIENCES

Poor Crop

The honey crop in this section of the State is a complete failure, and some are having to feed. ELZIE L. BEE.

Cowen, W. Va., July 2s.

Crop Poor

The honey crop is short in this part of the State, owing to dry weather and cool nights. No late rains to keep the flowers going. There were lots of flowers, but they did not seem to have the nectar, and the weather was too cool for bees to work good. We hope for better conditions next year.

Otay, Calif. W. A. BALES.

HIVES AND EXTRACTING HOUSE OF F. A. WICKLEIN, AT PERCY, ILL.

Foundation in Full Sheets

The first article in July American Bee Journal on "Full Sheets of Foundation," has been read, re-read, and read again. The advice is good, not only for the brood-frames but for the sections as well.

Tests are made for the benefit of the State Board of Agriculture of Connecticut for at least eight seasons and by 20 or more beekeepers. The question was asked at one of the State Board meetings; What is the most profitable size of foundation starter in either brood-frames or sections?

My answer was: A starter is too expensive. I cannot afford to use less than full sheets. I was asked to prove it. My reply was that four drone-cells to the inch make 16 to the square inch; five worker-cells to the inch make 25 to the square inch. Every 32 drone-cells may be displaced by 50 workers. Thirty-two consumers rob the apiarist of 50 producers. Often the drone-comb occupies one-fourth of the space. We agreed that an average of 40 pounds might be expected per hive, at 16 cents per pound or $6.40 per hive. One-fourth of that or the crop of one colony in four is lost by this excess of drones. With this amount you can readily buy sheets of brood foundation at 10 cents each for 64 frames, or enough for 6½ hives. This argument made an impression at first sight.

The following year, at least 20 beekeepers reported having tried it on half of their swarms Those colonies on full sheets averaged one super full of honey, over the hives hived on 1½-inch starters. That was the first year.

At least 20 beekeepers tried this from 1883 till 1894. One man stated, at the end of the fourth season, that each full sheet of foundation he used saved him 50 cents in value of product increase.

Some of the readers may say that there is another side to this question. Well, ask the bees to answer for you, They will answer it readily and truly. In Dr. Miller's hives, I am sure the deficiency of drone-cells counts something in his big yields. All this matter may be proven by the bees themselves.

Woodbury, Conn. HENRY L. JEFFREY.

[It is necessary that we should correct a slight error in the foregoing letter. As the cells of the bees are hexagon, the number of cells to the square inch is greater than the square of 4 or the square of 5. Drone-cells in reality number about 18 on each of the comb, for each square inch. Worker-cells number a trifle over 27 on each side or nearly 55 for both sides of a square inch of comb. This does not diminish in any way the argument of friend Jeffrey. It rather emphasizes the argument made. For proper measurement of cells see the Langstroth-Dadant "Hive and Honeybee," page 103.—Editor.]

Good Crop

We have one of the old time honey seasons. Bees are swarming plentifully, as the hives are crowded with bees and honey. White clover is more plentiful than it has been in this section in the 31 years that we have lived in this western country. Our bees wintered with very little loss

Lenexa, June 18. Max Zahner, Sr.

Wintering on Aster Honey

A correspondent who signs himself "Doctor Smoker," under date of December, 1915, reports that he has lost two colonies out of 12, and he attributes this loss to unripened aster honey. During the winter of 1914-1915, my bees subsisted on honey gathered in the late autumn—aster and Spanish-needle. It is claimed that bees will work on goldenrod; yes, indeed, they do here, if there are no asters.

Your valuable magazine requested reports on this subject; for this reason and not to dispute what brother "Doctor Smoker" said. I am making this report of my observations on aster honey as winter food. I have three hives under observation. When I prepared them for winter there was an abundance of capped and uncapped honey in the hives. I did not open any hive until last Sunday, March 5, and found brood both capped and in larval state. I may mention that the temperature during this and last month was as low as 12 degrees.

Frederick Bender.
Nashville, Tenn., March 12, 1916.

Beekeeping in Japan—A Correction

Reading the article of Mr. Stuart, page 204 of the American Bee Journal, I am sorry to find some misinformation in it.

It is true that we mostly use American hives, but not only Italian bees, as there are some foreign races, viz., Carniolan, etc., and Japanese native bees in Japan.

It is *true* that the "rape plant" is one of the principal sources of commercial honey in Japan, but the "genge" plant is more common, and the same may be said of the Japanese clover, which is mentioned under the name of "Louisiana," page 204 of the American Bee Journal. The rape is for small plantations, and blooms in a rather early period for the bees; on the contrary, the "genge" is planted in most parts of the country and blooms in favorable season, in May. So the latter is the principal crop.

At present, "the industry is still in its infancy" in Japan, but we are going into the honey business with our characteristic energy and thoroughness, as the Editor said.

Tara, Gifu-Ken, Japan. Y. Hiratsuka.

Wintering

Mr. Swensen's way, pages 413-4, December, 1915, is good; but one thing I do not like is that the sun cannot strike the hive to warm the bees which causes them to take a cleansing flight on warm days. My plan is similar, but I take out the front part of the box so that the sun can strike the full entrance of the hive and cause the frosty walls of the hive to get warm and melt the frost which cannot leave the hive until a certain temperature is reached.

The sooner the sun can strike the hive the sooner the frosty vapor will melt away; but by Mr. Swensen's plan the sun must first warm the outer box, and before the warmth of the sun gets through the wall of the box and packing of straw or leaves, the warmer part of the day is over. I always have my hive lower at the entrance than at the back, so the melted vapor can flow out at the entrance. I have wintered my bees in this way for seven winters, and they are always strong and ready to work when spring comes. Henry F. Carrillon.

Highland, Ill.

Preparing for Winter

A part of my apiary and the extracting house, which is situated on the north, is shown in this picture. A trellis of semi-evergreen honeysuckle runs along the west and north side of the apiary to check the cold winds in winter—a good wind break.

I winter on the summer stands with sealed covers. I place some paper or burlap on top of the hives, then put on paper roofing; fold it around the hive and tack it down with small nails. So far I have not lost any colonies during winter in the eight years of beekeeping except one that had its entrance clogged with snow and ice and smothered the bees.

During the hot summer days I protect my hives with shade-boards and burlap, as shown in the photograph. I produce extracted honey exclusively, using the shallow extracting supers, our main honey flow being in the fall, and it has never failed in the eight years that I have kept bees. I had about 1400 pounds of fall honey last year from 18 colonies.

I don't see how some people can keep bees and be without any bee journal or text book on bees. Before I had bees I did not know a thing about them It was in the year 1907 when a neighbor offered to give me a swarm, saying he had more than he needed. I accepted his proposition and at once subscribed for several bee journals, and got a a few text books on bees. Now I have 18 colonies and have had good success with them, while my neighbor is just about out of business, being one of those who knows everything about bees without reading any bee literature. F. A. Wicklein.

Percy, Ill.

Classified Department

[Advertisements In this department will be inserted at 15 cents per line, with no dis counts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

Phelps' Golden Italian Queens will please you.

Golden Queens for sale, 55 cents.
A. D. Keene, Bunkie, La.

Fine three-banded Italian queens. Circular and price list free. J. L. Leath,
Corinth, Miss.

For Sale—White clover extracted and comb honey. Henry Hettel, Marine, Ill.

Doolittle & Clark's untested queens $1.00 each; $5.00 for 6; per dozen, $9 00.
Marietta, N. Y.

Bees and Queens from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

Try my very best tested Caucasian, Italian queens at 75c each; hybrids at 25c each.
Peter Schaffhauser, Havelock, N. C.

For Sale—From 40 to 60 colonies of Italian and hybrid bees. All in good shape.
B. A. Manley, Milo, Iowa.

For Sale—200 colonies of bees; first-class location. Rosedale Apiaries.
J. B. Marshall & Son, Big Bend, La.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

Golden Italian Queens, no better honey gatherers anywhere at any price. Untested, $1.00. Tested, $1.50. Wallace R. Beaver,
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Northern-Bred Italian queens of the E. E. Mott strain. Unt. queens, 75c July and on. Send for free list. Earl W. Mott,
Glenwood, Mich.

The best Italian queen that can be had, $1.00; 6 for $5.00, June to November.
J. W. Romberger,
3113 Locust St., St. Joseph, Mo.

For Sale—Bright Italian queens at 55c each, or $6.00 per dozen. Safe arrival and satisfaction guaranteed,
T. J. Talley, Rt. 3, Greenville, Ala.

Three-Banded Italian queens Prices: One, 75c; 12 for $8.00. Tested, $1 25 each. Write for prices on nuclei and full colonies.
J. F. Diemer, Liberty, Mo.

Italian Queens that produce hustlers. Nothing but select queens sent out Untested, $1 00; $9.00 per dozen.
A. E. Crandall & Son, Berlin, Conn.

For Sale—300 to 600 colonies of bees, in the famous Hagerman Valley where failure is unknown; very reasonable. Address.
J. E. Hanks, Hagerman, Idaho.

Bright Italian Queens at 60c each; $6.00 per doz; $50 per 100. Safe arrival and satisfaction guaranteed. W. W. Talley,
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Phelps' Golden Italian Bees are hustlers

Vigorous prolific Italian queens, $1 00; 6, $5 00. My circular gives best methods of introducing. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

Golden Italian queens, select tested, $1.25. Tested, $1.00. Untested, 60c; 12, $7.00. Select untested, 70c; 12, $8.00. No foulbrood.
D. T. Gaster, Rt. 2, Randleman, N. C.

Leather Colored "Nutmeg strain" of queens, $1.00; doz., $10. Tested, $1 50. Special price on large lots. Return mail.
A. W. Yates, 3 Chapman St., Hartford, Conn.

Wanted—Every lb. pkg. shipper to quote me his lowest possible price on 50-lb. pkgs. with queens, to be shipped about May 20, 1917. W. L. Lovejoy, Clarkston, Mich.

Golden and three-banded queens. Choice untested queens at 50c; 100 for $40. Dr. Miller's strain. Untested, 75c; 25 or more at 60c.
The Stover Apiaries, Mayhew, Miss.

A Little Ad in our classified columns will sell that perfectly good equipment that you no longer need, Only 15 cents per line each insertion.

"Queens of Quality" reared from a daughter of one of Dr. Miller's famous queens, $1.00 each by return mail. After July 1st, 75c each; $8 00 per doz.
J. Ivan Banks, Dowelltown, Tenn.

For Sale—500 colonies of bees; 200 colonies operated for comb honey. Apiaries are located in the famous Snake River Valley. Gem State Apiaries.
Box 67, Rigby, Idaho.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

Choice Italian, Carniolan or Caucasian queens, Untested, 75c. Tested, $1.25 Breeding queens, $2.50. Virgins, 40c each; 3 for $1.00. C. W. Finch, 1451 Ogden Ave., Chicago, Ill.
Phone Haymarket 3384.

Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

For Sale—Good Italian queens, untested 75c; tested, $1.00; nuclei, 2-frame, $3 00; 1-lb. package, $2.00; 2-lb. package, $3.00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1904 Park Ave., Little Rock, Ark.

For Sale—250 colonies of high grade Italians; fine location on virgin alfalfa at a bargain. New modern equipment, comb and extracted. New country, fine climate, and bee business developing rapidly. Splendid opportunity for energetic man.
A. W. F. Lee, Cordell, Okla.

For Sale—Three-banded Italian queens and bees from the best honey-gathering strains obtainable. Untested queen, 75c; 6, $4.25; 12, $8.00. Tested queens, $1 25; 6, $7.00; 12, $12. For select queens add 25c each to above prices. Queens in quantity lots or bees by the pound, write for prices.
Robt. B. Spicer, R.F.D. 181, Wharton, N. J.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y

GOLDEN ITALIAN QUEENS by June 1st. Untested, 75c or $4.00 per half doz.; $8.00 doz. Select untested, $1.00. Tested, $1.25 each or $7.00 per half doz.; $12 a doz. Breeders, $3 00 to $5.00 each. Purely mated guaranteed. Send for circular. J. I. Danielson,
Rt. No. 7, Fairfield, Iowa

CARNIOLAN, golden, and 3-banded Italian queens. Tested, $1.00. Untested, 75c; 6, $4.20; 12, $7.80. ½-lb. bees, 75c; 1-lb. $1.25. Nuclei, per frame, $1.25. No disease; everything guaranteed. Write for price list.
C. B. Bankston, Buffalo, Leon Co, Tex

AN established strain of honey gathering golden stock. Honey is what you want without much swarming. Book your orders early to save delay. One untested queen, $1.00; 6 for $5.00; 12 for $9.00. Write us what you want. T. S. Hall, Talking Rock, Ga.

GOLDEN Italian Queens bred strictly for business that produce a strong race of bees as honey gatherers. Untested 75c each; 6 for $4.25; 12, $8.00. Safe arrival, prompt delivery, and satisfaction guaranteed.
L. J. Dunn, Box 338, J. R.R. 6, San Jose, Calif.

GRAY CAUCASIANS—Early breeders; great honey gatherers; cap beautifully white; great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1 00. Select untested, $1.25. Tested, $1.50. Select tested, $2.00. H. W. Fulmer,
Box 10, Andalusia, Pa.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons,
Rt. 3, Williamstown, Ky.

MY THREE-BANDED northern-bred pure Italian queens must be seen and tried to be fully appreciated for hardiness and honey gathering qualities, etc. Give me a trial order. My prices for August and September. Untested, 80c. Select untested, $1.15. Select tested, $2.50. Fay L. Barber,
290 State St. Lowville, N. Y.

FOR SALE—Pure Italian bees with tested queen, $4.50 per col.; cols. with mismated queens, $4.00 each; light colored hybrid cols. with queen, $3.50. All from the J. P. Moore's strain and in 8 frame hive bodies in winter cases, standard full depth self-spacing Hoffman frames, 8 to each hive. All combs straight, strong and healthy with plenty of honey, f. o b. here. ½-lb. package wire cages without queens, one, $1.50; 2, $2.00. If queens are wanted add price of queens to package. Untested, 85c. Tested, $1.50. Breeders, 3.00 to $5.00. Wilmer Clarke,
Earlville, Mad. Co., N. Y.

HONEY AND BEESWAX

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
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COMB HONEY our specialty. Highest market prices obtained; prompt returns made. Send us your shipments
Albert Hurt & Co., New Orleans La.

HONEY FOR SALE—New clover honey in 60-pound cans, 9c per pound. Comb honey, No. 1 to fancy, $3 50 per case; No. 2, $3.00 per case of 24 sections, six cases to carrier.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Raspberry, basswood, No. 1 white comb, $3.00 per case; fancy, $3.25; 24 Danz. sections to case. Extracted, 120-lb. cases, 9c per lb. W. A. Latshaw Co.,
Clarion, Mich.

WANTED—COMB HONEY—Fancy and No. 1 qualities; 4¼x1⅞ inch sections preferred. Also white extracted honey, carload or less quantity. Hoffman & Hauck.
Richmond Hill, N. Y.

TO exchange 500 B Hoffman frames for good ex. clover honey or offers. Address.
H. O. McElhany, Vinton, Iowa.

SUPPLIES.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A E. Burdick, Sunnyside. Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Greenville. Tex.

WANTED—10-fr. bottom-boards, extracting and comb supers; extractor for jumbo frs; winter cases, and any equipment that will fit 10-fr. jumbo hives; also bees in lb. pkgs. with queens. W. L Lovejoy,
Clarkston, Mich.

FOR SALE—Medium brood foundation, one to ten lbs, 52c per lb. Up to 25 lbs, 50c. Up to 50 lbs., 48c; 100 lbs., 48c, prepaid in Louisiana Root's goods for sale. Beeswax wanted, 26c cash, 27c in trade
J. F Archdekin, Bordelonville, La.

WORK INCENTIVE—In long, good seasons spring-weaklings' yields equal strongest. Why, unless tiering-up destroys work incentive? Quin-compactness Hives every super adjoins brood-nest—incentive always there. For printed matter, address,
Wm. F. McCready, Estero, Lee Co., Fla.

HONEY LABELS

HONEY LABELS that have broken away from the all-look alike bunch. Made to suit your ideas. Lowest prices Samples FREE.
Liberty Pub.Co., Sta.D, Box 4H. Cleveland, O.

MISCELLANEOUS

PRINTING FOR BEEKEEPERS—Noteheads, envelopes, cards, tags etc. printed and postpaid. 1000 of either, $2.15; 500, $1 30; 250, 95c. Fine stock and cuts used. Lowest prices in the United States. Complete line of samples and price list free.
Rennecamp Printing Co., McKees Rocks, Pa.

HONEY AND BEESWAX

CHICAGO, Aug. 17.—The new honey from the harvest of 1916 is appearing on the market. No sales have been reported.

Comb is being held at 13c per pound for the best grade. Owing to the warm weather that has prevailed during the past four weeks that would have a tendency to prevent any activity, so that at this time it is difficult to diagnose the conditions, especially as to what the price is going to be this coming month. Yet, indications are that there is not going to be much, if any, advance over that which has been obtained for the product of 1915, a goodly quantity of which is yet unmarketed.

Extracted also remains quiet at from 7@8c per pound for the white and ambers at from 5@7c per pound.

Beeswax is steady at 28@30c per pound, according to color and cleanliness.

R. A BURNETT & CO.

KANSAS CITY, MO., Aug. 16.—There is still quite a surplus of comb honey on the market. Strictly No. 1 white comb honey, 24 section cases is selling at $3 25 to $3 40 per case. No. 1 amber comb honey at $3.00, and No. 2 amber comb honey at $2.90 to $3 00.

Strictly fancy white extracted honey is selling at about 8½c a pound, and amber at 7½c a pound. The demnd for honey is only fairly good.

C. C. CLEMONS PRODUCE COMPANY.

SAN ANTONIO, Aug. 15.—In line with our prediction in the August number, would say that there is a distinct feeling of confidence in the minds of Texas honey producers and a perceptible stiffening of prices. Comb honey is reaching a basis of 9c f. o. b. shipping point and extracted honey 7c. The practical assurance of the forming of the Texas Honey Producers' Association and the expectation of cooperative prices ruling in the future has had a tendency to make buyers more anxious for honey than sellers were for a market. Beeswax prices are still low, ranging from 25c cash to 27c exchange basis SOUTHWESTERN BEE CO.

DENVER, Colo, Aug. 19.—We are selling new crop comb honey in the local market at the following jobbing prices: Fancy per case of 24 sections, $3 38 No. 1, $3.15; No. 2, $2.93. White extracted, 8½@8¾c per pound; light amber, 8@8¼c per pound, and amber 7@8c per pound We pay 26c per pound in cash and 28c per pound in trade for clean average yellow beeswax delivered here.

THE COLO. HONEY PRODUCERS' ASS'N
F. Rauchfuss, *Mgr.*

NEW YORK, Aug. 6.—There are no prices established as yet on the new crop of honey, comb as well as extracted. From reports we have thus far received it seems evident that a good crop of white honey has been produced in the eastern and middle States, whereas California reports a very short crop, especially so of sage honey.

The old crop is pretty well cleaned up with the exception of West India, which is arriving in large quantities, and there seems to be an unlimited supply.

We will not be able to tell or make you any quotations until next issue.

HILDRETH & SEGELKEN.

BEE SUPPLIES

At wholesale and retail. Dovetailed hives, Marshfield sections, shipping cases, and all kinds of small needs. Beeswax wanted. Prices for the asking.

W D. SOPER
325 So. Park Ave. Jackson, Mich.

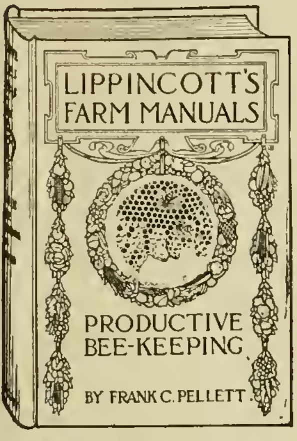
Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00,

Langstroth on the Honey Bee—(Revised by Dadant.) The classic in bee culture. A 575 page cloth bound bee book brought up-to-date. It is an authority, and is used as a text book in many schools and colleges. Finely illustrated and well indexed. It is a book which should be in the hands of every beekeeper, large or small. Chapters are devoted to all important bee subjects from bee-anatomy to diseases and honey production and marketing. Price, postpaid, $1.25, or with American Bee Journal one year, both only $1.75. French edition of this book, price, postpaid, $1.50. Spanish edition, postpaid, $1.85

The Big Ben Binder.—It has a stiff book outside cover with the name American Bee Journal printed in gold letters on the back. It is made to hold the issues of three years (36 copies). Makes reference easy and preserves copies from loss, dust and mutilation. Price, postpaid, $1 00, or with the American Bee Journal one year, both for $1.60, or given free as a premium for sending in two new subscriptions at $1.00 each.

A BEE BOOK FOR THE PRACTICAL MAN

IS "PRODUCTIVE BEEKEEPING," by Frank C. Pellett



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State Bee Inspector for Iowa and a Practical Beekeeper as Well

One of Lippincott's "Farm Manual" Series, this book of 326 pages is finely gotten up, finely bound, and has 134 illustrations, nearly all original with the author. Price, $1.50.

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1. BEEKEEPING A FASCINATING PURSUIT
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6. THE OCCUPANTS OF THE HIVE
7. INCREASE
8. FEEDING.
9. PRODUCTION OF COMB HONEY
10. PRODUCTION OF EXTRACTED HONEY
11. WAX—A BY-PRODUCT OF THE APIARY
12. DISEASES AND ENEMIES OF BEES
13. WINTERING
14. MARKETING THE HONEY CROP
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Productive Beekeeping
Langstroth on the Honey Bee } **Both postpaid for only $2.50**

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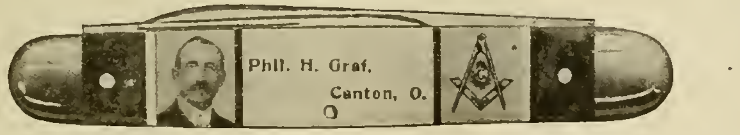
American Bee Journal, Hamilton, Illinois

BEE-KEEPER'S NOVELTY POCKET-KNIFE



Your Name and Address will be put on one side of the handle as shown in the cut, and on the other side a picture of a Queen-Bee, a Worker-Bee, and a Drone-Bee. The handle is celluloid, and transparent, through which is seen your name. If you lose this Knife it can be returned to you, or it serves to identify you if you happen to be injured fatally, or rendered unconscious. The cut is the exact size. We have succeeded in getting this knife made in lots from genuine car-van steel. It is especially well tempered and keeps its edge remarkably. When ordering be sure to write exact name and address. Knife delivered within two weeks after we receive order.

Price, postpaid, $1.00; or with a year's subscription to the American Bee Journal—both for $1.80; or given FREE as a premium for sending us 3 New subscriptions at $1.00 each.

American Bee Journal, Hamilton, Illinois.

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4 MONTHS FOR 10c
Trial Subscription To Fruit and Garden Paper
Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,
We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.
Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

Southern Bee Culture.—A booklet written by J. J. Wilder, the most extensive beekeeper and honey-producer in the State of Georgia. It is a real hand book of southern beekeeping. Every beekeeper, especially in the South, should have a copy of Mr. Wilder's booklet. He conducts apiaries by the dozen, and produces many tons of honey every season. He tells in a careful way just how he does it. The price of this booklet is 50 cents; or with the American Bee Journal one year, both for $1 25.

Life of the Bee, by Materlinck.—This author, who is acknowledged by every one as one of the finest prose writers, applies the romanitic side in discussing the honeybee. The book reads like a fairy tale, and it is as interesting as a novel. His knowledge of the traits of the bee is only fair; his aim being to discuss the romantic side of the queen, the drone and the swarm. The book is well bound and well gotten up, and is a pleasure for any one to read. Price, postpaid, $1.40, or with the American Bee Journal, both for one year, $2.00.

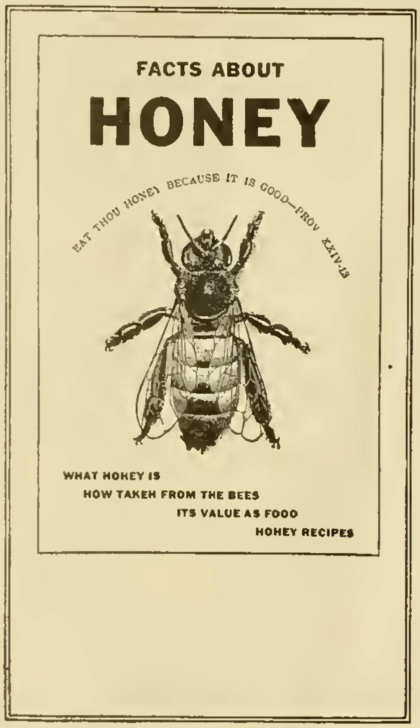
Beekeeping, by Dr. E. F. Phillips, In Charge of Bee Investigations at Washington, D. C., and an authority on the subject. This book has just been issued, and is of such a caliber that it should be in every beekeeper's library. It contains some of the later experiments, and has a very valuable chapter on wintering. A well bound, well illustrated and a good book. Price, $2.00; postage extra. By special arrangement we can offer this book, postpaid, together with American Bee Journal one year, both for $2.50.

GERMAN BEE BOOKS

Amerikanische Bienenzucht.—This is a beekeepers' hand book of 138 pages in the German language, written by Hans Buschbauer. It is just what German beekeepers will want. It is fully illustrated and bound in cloth. Price, postpaid, $1.00, or with the American Bee Journal one year, both for $1.75.

Bienenzucht and Honiggewinnung is the name of another and smaller paper-bound book by J. F. Eggers. It's postpaid price is 30 cents.

FACTS ABOUT HONEY



FACTS ABOUT

HONEY

EAT THOU HONEY, BECAUSE IT IS GOOD—PROV. XXIV-13

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the 'Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra -	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " " -	9.00
30 " " -	.75	2000 " " " -	17.00
50 copies, postage extra -	.75	5000 " " " -	40.00
100 " " " -	1.25	10,000 " " " -	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

American Bee Journal, - Hamilton, Illinois

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. The **CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers; results are obvious.

PRICES—Untested, April, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN
609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

THE QUEEN OF ALL QUEENS

Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

CIRCULAR FREE

Grant Anderson, Rio Hondo, Texas

START THE SEASON RIGHT

By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE

SAVES
HONEY
TIME
MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
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Please mention Am. Bee Journal when writing

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Successor to Northwest Farm and Home
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Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST

BEE SUPPLIES

Best Sections, Best Shipping Cases
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.

H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

Queens and Bees
FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5.00 each. One pound package bees, $1.25; 25 packages, $1 00 each; 2-pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2 75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

A FINE untested Italian Queen for 60c. Tested, $1.00. Satisfaction guaranteed.

J. F. ARCHDEKIN
Bordelonville, La.

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

CYPRESS BY TEST
Substitutes by Talk
THE PROOF?—2 LETTERS FROM BEEMEN:

"Our correspondent makes serious complaints against·········and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter," (Etc.)—and here's another:

"Mr. ———, of ———, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE BOTTOMS."

Is there value to you in an endurance test of 48 years in greenhouse sash? It is reported to us that sash made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868 are STILL DOING SERVICE.

IT WILL SERVE YOU AS WELL and save you the nuisance and expense of repairs and replacements.

The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you to an endurance test of 30 or 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good ordinary business sense.

WRITE US FOR VOL. I. OF THE FAMOUS CYPRESS POCKET LIBRARY WITH FULL U. S. GOVERNMENT REPORT ON "THE WOOD ETERNAL."

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., and
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

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DO YOU WANT
Your Bee Supplies Shipped Promptly?

We carry four to six carloads of the finest BEEWARE on hand at all times, and can fill your orders without delay. BEE-HIVES, SECTIONS, SHIPPING CASES, TIN CANS, and all other Bee Supplies, also

DADANT'S FOUNDATION

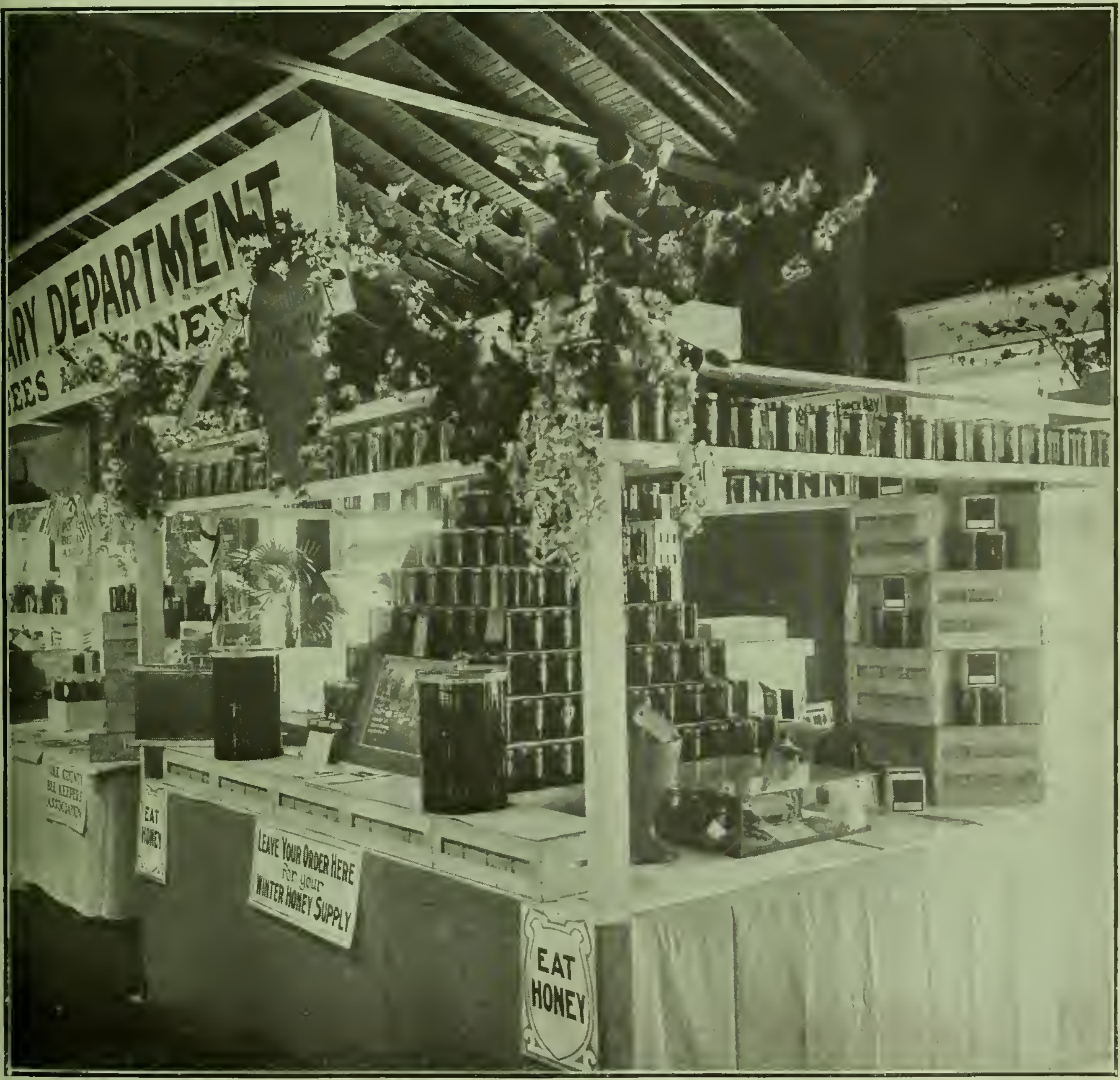
by return freight, mail or express. We have forty years' experience and thousands of satisfied customers. Are you one of them?

DADANT & SONS, Hamilton, Illinois.
Dear Sirs:—The box of foundation arrived a few days ago in fine condition. I have kept bees for over thirty years, and have purchased foundation from many firms, and must say that your foundation is the nicest that I have ever used, and I wish to thank you for the prompt shipment and large amount of wax you secured for me.
Yours truly,
A. W. DARBY.
Alburg, Vt. May 3, 1916.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

OCTOBER, 1916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EES AND HONEY
EAT HONEY
LEAVE YOUR ORDER HERE for your WINTER HONEY SUPPLY
EAT HONEY

The Winning Honey Exhibit at the Iowa State Fair

BEE SAFETY—HOW?

By ordering Murry's queens. I have testimonials on file that my strain of bees are strongly resistant to European foulbrood, Isle-of-Wight disease and paralysis. Plenty of queens ready to ship on short notice from now until Nov. 1st. Safe arrival and satisfaction guaranteed. No disease of any kind in my apiaries. Three-banded Italians and Goldens. Untested, 1 for 75c; six for $4.00. Any number over that 62½c each. Tested 1 for $1.00; six for $5.00. Over that $10 per doz.

H. D. MURRY, Mathis, Texas

$2 FEMALE
$1 MALE

CASH

paid for butterflies, insects every year for art work. Beginners. Folder Free.

SINCLAIR, BOX 244, D-18
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Bee-Supplies

LET US FIGURE WITH YOU

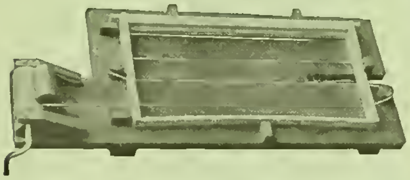
We know we can satisfy you on quality. Write for catalog.

C. C. CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

Northern Bred Italian Queens

More hardy than Southern bred Try them once. Untested, 75c. Sel. tested, $1.50 Plans for beginners, "How to Introduce Queens and Increase," 25 cents.

E. E. MOTT, GLENWOOD, MICH.



WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day Tighter wires, no kinks, no sore hands. Price, $2 00.

G. W. Wright Company, Azusa, Calif.

BEE SUPPLIES

At wholesale and retail. Dovetailed hives, Marshfield sections, shipping cases, and all kinds of small needs. Beeswax wanted. Prices for the asking.

W D. SOPER
325 So. Park Ave. Jackson, Mich.

Help Advertise Honey

—By putting—

EAT HONEY
NATURE'S OWN SWEET—AIDS DIGESTION

Stickers everywhere. 1000 postpaid for 35c Address this office.

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4 50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

YOU DON'T WAIT FOR MONEY WHE
YOU SHIP MUTH YOUR HONEY

We Remit the Day Shipments Arrive.

We are in the market to buy FANCY AND NUMBER ONE WHITE CO HONEY, in no-drip glass front cases. Tell us what you have to offer and n your price delivered here.

Will also buy—
- White Clover extracted and Amber extracted.
- A few cars of California Water White Sage.
- A few cars of California Orange Blossom.

When offering extracted honey mail us a sample and give your lowest p delivered here, we buy every time you name a good price.

We do beeswax rendering; ship us your old combs and cappings. W us for terms.

THE FRED. W. MUTH CO.
"THE BUSY BEE MEN"

204 Walnut Street. CINCINNATI

FOR SALE

My good will and line of Bee Suppiles with hardware stock in connection, in a town of 1800; doing business from $8000 to $12,000 per year. The best chance for the right party o make money. Reason for selling, il health. Write or call.

H. S. DUBY & SON, St. Anne, Il

Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

Grading Rules of the Colorado Honey-Producers' Association, Denver, Colo., Adopted Feb. 6, 1916.

(*All honey sold through the Colorado Honey-Producers' Association must be graded by these rules.*)

COMB HONEY.

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey, comb and cappings white, or slightly off color. Combs not projecting beyond the wood, sections to be well cleaned No section in this grade to weigh less that 12½ ounces net or 13½ ounces gross. The proof each section in this grade must be stamped, "Net weight not less than 12½ ounces."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

No. 1.—Sections to be well filled, combs firmly attached, not projecting beyond the wood and entirely capped, except the outside row next to the wood. Honey, comb and cappings from white to light amber in color. Sections to be cleaned. No section in this grade to weigh less than 11 ounces net or 12 ounces gross. The top of each section in this grade must be stamped, "Net weight not less than 11 ounces." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

No. 2.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 ounces net or 11 ounces gross. Also of such sections that weigh 11 ounces net or 12 ounces gross, or more, and have not more than 50 uncapped cells altogether, which must be filled with honey. Honey, comb and cappings from white to amber in color. Sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 ounces." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

COMB HONEY THAT IS NOT PERMITTED IN SHIPPING GRADES.

Honey packed in second hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured or patched up sections.

Sections containing honey-dew,

Sections with more than 50 uncapped cells or a less number of empty cells.

Sections weighing less than the minimum weight.

All of such honey should be disposed of in the home market.

EXTRACTED HONEY

Must be thoroughly ripened, weighing not less than 12 pounds per gallon. It must be well strained and packed in new cans, 60 pounds shall be packed in each 5 gallon can, and the top of each 5-gallon can shall be stamped or labeled, "Net weight not less than 60 pounds."

Extracted honey is classed as white, light amber and amber, the letters "W," "L. A.," "A," should be used in designating color, and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new, substantial cases of proper size.

STRAINED HONEY

Must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained, and if packed in 5-gallon cans each can shall contain 60 pounds. The top of each 5-gallon can shall be stamped or labeled "Net weight not less than 60 pounds." Bright clean cans that previously contained honey may be used for strained honey.

HONEY NOT PERMITTED IN SHIPPING GRADES.

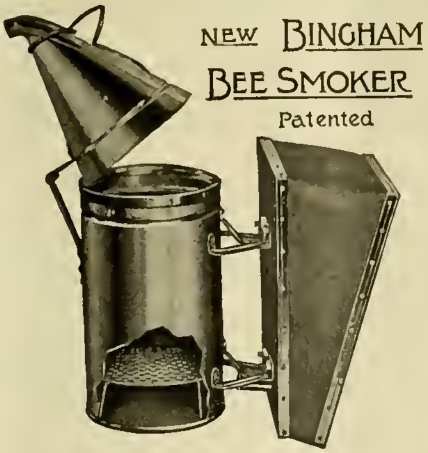
Extracted honey packed in second-hand cans.

Unripe or fermenting honey, weighing less than 12 pounds per gallon.

Honey contaminated by excessive use of smoke.

Honey not properly strained

Honey contaminated by honey-dew.



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BEE-SMOKER

Nearly forty years on the market and the standard in this and many foreign countries. It is the all important tool of the most extensive honey-producers of the world. For sale direct or by all dealers in Beekeepers' Supplies.

Smoke Engine, 4-inch stove.. ....28 oz.		$1.25
Doctor, 3½-inch stove...............26 oz.		.85
Two larger sizes in copper extra.		.50
Conqueror, 3-inch stove...........23 oz.		.75
Little Wonder, 2½-inch stove.....16 oz.		.50

Hinged cover on the two larger sizes postage extra.

A. G. WOODMAN CO., Grand Rapids, Mich.

TIN HONEY CANS—LOW PRICES

5-lb. friction-top pails, lots of 50 at $2.75; 100 lots, $5 20; crates of 203 at $10.
10-lb. friction top pails, lots of 50 at $4.00; 100 lots, $7.50; crates of 113 at 8.30; 565 at $40, f. o. b Chicago.
60-lb cans, two in a case, 70c per case; quantity lots, 67c per case; crates of 50 at $12 f. o. b, Chicago or Ohio factory. Prompt shipments are being made at this time.

A. G. WOODMAN CO. - - Grand Rapids, Michigan

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to date. Subsciption price postpaid.
Canada, $1.00 a year. United States, $1 25 a year. Foreign, $1 50 a year.
Sample copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

WANTED
HONEY

Comb and Extracted for our regular trade. Last year's sales, $2,936,504 00.

COYNE BROTHERS
Established 1894
FRUIT AND VEGETABLES
119 W. South Water St. Chicago

The New Edition of the A. B. C. and X. Y. Z. of Bee Culture

BIGGER AND BETTER

A large number of the old articles have been rewritten. Many new articles that never appeared before in any former edition occur in this one.

THE CHEMISTY OF HONEY

A. Hugh Bryan, formerly connected with the Bureau of Chemistry, Washington, D. C., and who at the time made a speciality of honey, has written the articles dealing with the chemistry of honey, glucose, invert sugar, nectars, adulterations, etc. He has also written a special article for the benefit of chemists, on how to analyze honey.

Since the introduction of artificial invert sugars, new methods have to be employed; and these are set forth in this new edition so that any chemist will be able to use the very latest information that has been available to the Bureau of Chemistry, Washington, D. C.

BEE BOTANY

This is being handled by John H. Lovell, of Waldoboro, Maine, a beekeeper, botanist, been and an entomologist. Some new species have been added, and in other cases the descriptions have made more complete.

PRACTICAL ARTICLES

These have been revised and rewitten by the editors of GLEANINGS. All the latest methods of management have been incorporated. Articles on bee diseases have received entirely new treatment, especially those relating to European foulbrood and the Isle of Wight disease.

WINTERING

The articles on wintering will include the latest discoveries of the Bureau of Entomology pertaining to winter temperatures, winter activities and winter packing.

The new volume will contain something over 900 pages, and will sell for $2.50. It will be ready for delivery about January 1.

THE A. I. ROOT COMPANY, MEDINA, OHIO

QUEENS OF MOORE'S STRAIN OF ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, 1, $1.00; 6, $5 00; 12, $9 00
Select untested, 1, $1.25; 6, $6.00; 12, $11.00

Safe arrival and satisfaction guaranteed. Circular free.

I am now filling orders by return mail.

J. P. MOORE
Queen Breeder Rt. 1, Morgan, Ky.

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CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

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325 Broadway - - Billings, Montana

REPRINT OF OLD 1853 EDITION OF

Langstroth on the Hive and Honey Bee

This book is very interesting when read in connection with the Revised Langstroth. Many are surprised at the number of devices mentioned by Langstroth years ago, which are re-written as new today. We offer the old reprint at a special postpaid price of $1.00.

Reprint of Langstroth, $1.00 } Both postpaid **$1.85**
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Reprint of Langstroth, $1.00 } Both for **$1.50**
American Bee Journal, $1.00 }

All three above for $2.50

American Bee Journal, Hamilton, Illinois.

HONEY JARS

25 1-pound screw cap flint glass jars; 1 gross crates, $4.75. Discount on quantities. We carry several styles of jars.

Light honey, clover flavor, two 60-pound cans, 9 cts. per pound. Sage honey, 9¾ cts. per pound. Sample, 10 cts. White comb honey.

Catalog of bees and supplies free.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

Shipping Cases for Comb Honey

Don't make the mistake of putting a fine lot of section honey in poor shipping cases. It will lower the price to you and damage your future sales. **"Falcon"** cases are A No. 1, and will be a credit to any crop of honey. Prices are as follows:

Shipping Casea in Flat, Without Glass

No.		10	100
1	holding 24 sections, 4¼x1⅞, showing 4	2 00	18 00
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1½	holding 24 sections, 4¼x1½, showing 4	1 90	17 00
6	holding 24 sections, 3⅝x5x1½, showing 4	1 80	16 00
8	holding 24 sections, 4x5x1⅜, showing 4	1 80	16 00

Shipping Cases, With Giass

Number and description	Nld	In flat, with 3-in. glass			With 2 in. glass
		1	10	100	100
11 Same as No. 1	35	.25	$2 30	21 00	20 00
13 Same as No 3	22	.15	1 40	12 50	12 00
11½ Same as No. 1½	35	.25	2 20	20 00	19 00
16 Same as No. 6	30	22	2 10	19 00	....
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Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

WANTED HONEY

Both Comb and Extracted

If comb honey, state grade and how it is put up, and your lowest price delivered Cincinnati.

Extracted honey, mail a fair size sample, state how it is put up, and your lowest price delivered Cincinnati.

If prices are right, we can use unlimited quantities.

C. H. W. Weber & Company, 2146 Central Avenue, Cincinnati, Ohio

Sweet Clover Seed

QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22.50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

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Is the Texas Queens. Send me your orders early for Italian and Carniolan. Queens, $8.00 per doz. Bees per pound, $1.50.

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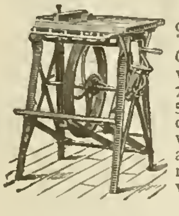

Read what J. I. Parent of Chariton, N. Y., says "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc. to make with this saw. It will do all you say of it."

Catalog & price-list free

W. F. & JOHN BARNES

995 Ruby St., ROCKFORD, ILLINOIS.

How About Next Year?

The season of 1916, just closed, has been a most unusual one. Beekeepers who did not fortify themselves early in the season by securing their hives, sections and other goods and having their equipment ready for the bees, found that when the honey season was upon them that they were up against the following conditions:

Everybody wanted bee goods—dealers had depleted stocks on account of the unusual demand —manufacturers were several weeks behind on orders—their factories were working overtime, some beekeepers were delayed, some disappointed, some got their goods when it was too late.

Now, Mr. Beekeeper, What are You Going to Do About Next Season?

Prospects for a big Bee and Honey Season next year were never better than they are right now. PREPARE!! Order your goods this fall. Write us or our dealer nearest you for a list of new prices, owing to advances in raw material.

If you are not on our mailing list, write us at once and we will send you a catalog containing name of the distributer nearest you, and in this way you will also be sure to receive a copy of our new 1917 catalog when it is issued.

LEWIS

Hives and Sections and all other goods are made from the best material and are scientifically manufactured.

OUR GUARANTEE

We absolutely guarantee our goods to be perfectly manufactured of the best material for the purpose. On examination, if our goods are not as represented, we do not ask you to keep them. Return same at our expense and we will refund your money, including any transportation charges you have paid. If you purchase our goods from one of our distributers, the same guarantee holds good, as we stand back of them.

G. B. LEWIS COMPANY

Watertown, Wisconsin, U. S. A.

Send for catalog giving name of distributer nearest you

AMERICAN
BEE JOURNAL

Vol. LVI.—No. 10 HAMILTON, ILL., OCTOBER, 1916 MONTHLY, $1.00 A YEAR

NOTES FROM TENNESSEE

Glimpses of Dixie Beekeeping as Seen By Our Staff Correspondent

Who has not heard the praise of sunny Tennessee? In the north are broad fields of grass where graze sleek herds of fine dairy cattle, while along her southern borders are vast fields of cotton. Her corn crops in some sections would do credit to the most favored corn producing section of Illinois, while in other counties tobacco and peanuts are grown in abundance. Tennessee lies in that favored latitude where it is not too warm for the crops which make the north rich, nor yet too cold for the staple crops of the southland. Few states can equal her in the diversity of her productions, and none can excel her in the multitude of good things which she produces. In her northern hills apple orchards of vast acreage are found, while in her southern counties figs may be gathered by her people from their own trees. Choose what you will, unless it be a semitropical fruit, almost anything that can be grown with profit in the United States, you will find a place adapted to it in Tennessee.

An invitation to the field meetings of the Tennessee Beekeeper's Association brought the desired opportunity to visit a section which the writer had long wished to see. Arriving at Nashville a day ahead of the first of the meetings gave time to visit the queen-rearing apiaries of J. M. and Ben G. Davis, father and son, who are among the best known beekeepers of the southland. We have been familar with Ben Davis apples in the north for many years but the Tennessee Ben Davis declines the honor of being the namesake of the apple or of having it named for him. Whatever the quality of the apple, the Davis queens have a splendid reputation in many states and it was a real treat to visit the apiaries and learn something of the methods of the men who send out from eight to ten thousand queens per year. There were so many things of interest to see, that we will have more to say about their methods in another article. J. M. Davis has been engaged in queen-rearing for forty-four years continuously and is probably the oldest queen breeder in the States. He is now engaged in rearing three-banded queens exclusively, since his son Ben took over the goldens. The apiaries are several miles apart to avoid possible mixing of the golden and three-banded stock.

THE ALLEN APIARY IN THE CITY OF NASHVILLE, TENN.

The field meeting was held at the home of the Dixie queen, Mrs. Grace Allen, who is a most charming hostess. A good crowd was present and the usual field day discussions were followed out. Mr. and Mrs. Allen treated the visitors to a picnic dinner on the lawn, where the demonstrations and discussions were continued until late afternoon. A number of prominent men whose names are familiar were in attendance at the Nashville meeting. Commissioner of Agriculture, Bryson, was present and welcomed the visitors to Nashville. State Entomologist, Bentley, Dr. J. S. Ward, the State Bee Inspector; J. M. Buchanan, secretary of the Association; the Drane boys of Memphis who are at present in the army, and numerous others, assisted in the demonstrations or talked on subjects of timely interest. The meeting was fully equal to the best which the writer has ever attended. After the meeting a drive with Dr. Ward about the city through the parks gave an opportunity to see some of the beauty spots of the region.

Dr. E. F. Phillips and E. R. Root were both present and together with several of the Tennessee beemen made quite a party the following day for the meeting at Hollow Rock. Doctor Phillips, Mr. Root and the writer were called upon at each of the three points for talks, and everywhere we were shown every possible courtesy. At Hollow Rock the meeting was held at the home of Mr. L. E. Smith, where all the visitors were treated to a bountiful dinner served in true southern style. The attendance was small at Hollow Rock, since there are not many beekeepers in that section, but the day was pleasantly spent in discussions and in visiting among those present.

At Memphis, W. E. Drane, who accompanied the party home on a short furlough, took us for an auto ride about the city. We were especially interested in the cotton fields and the big warehouses where the cotton is stored for market. The beekeepers came from some distance to attend this meeting several being present from Mississippi. The problems of this section are somewhat different from those which concern us here in the north. In a section where fig trees grow without protection, little attention is given to wintering the bees further than to provide them with sufficient stores. There is much honey gathered which is of poor quality and some care is necessary to keep it separate from the better honey. Mr. Drane suggested that the beekeepers of that section should form an association for the purpose of grading and blending their honey and thus realize the most possible for their product.

J. M. DAVIS AND SON, BEN DAVIS

In Tennessee, the State Board of Agriculture and the State University are taking an interest in the development of the honey-producing industry so that we look for an increasing interest in up-to-date methods. Like other states, Tennessee still has a large number of beekeepers who have not yet adopted movable frames and full sheets of foundation, but the Beekeeper's Association is encouraging every movement which looks to the betterment of the industry. With all these influences at work and with the high place she already holds among the states as shown by the census, unless the northern beekeepers have a care, Tennessee will shortly be at the head of the states in honey production.

Selling Honey

BY A. F. BONNEY.

The sentiment of beekeepers seems to be crystalizing into the proposition that no one rule will apply for all men. He with a crop of a few hundred pounds cannot afford to advertise but must depend on the local market and this condition persists until the crop is so large that it must be disposed of in lots of a thousand or more pounds to one party. The sooner all beekeepers understand this the quicker each will seek his own field according to size of crop.

To increase my local trade I am now circulating advertisements as as follows:

PRIZE CAKE.

"To the person sending me the best Honey Cake of any kind, made of BONNEY HONEY, before December 15th, I will send a gallon can of BONNEY HONEY, postage paid as a free gift.

THE BUCK GROVE APIARY,
BUCK GROVE, IOWA.
DR BONNEY, King Bee.

I have already begun to see the results of the ad and when the present hot spell of weather is over I expect to see many calls for honey for cake purposes.

Another thing the small producer can do to increase sales: Advertise like this:

"If you will bring your own container, I will sell you BONNEY HONEY for 10 cents a pound. It is delicious. Dr. BONNEY, King Bee."

It matters not if you are in town or on the farm, people find you with Mason jars, Karo cans and even water buckets, and you will sell one to fifty pounds, just as I do.

Here follows the principal cake recipe I send out as I am very fond of it, and hope to get in enough to last me all winter.

THE FINEST GINGERBREAD MAN EVER TASTED.

"Take one cup BONNEY HONEY, half cup dark molasses, 1 cup but-

SOME WELL KNOWN TENNESSEE BEEKEEPERS
Upper row—G. M. Bentley, J. M. Davis, Ben G. Davis, Thos. G Drane, I. N. Banks, Dr. J. S. Ward, J. M. Buchanan. Lower row—W. E. Drane, Mrs. Grace Allen.

ter, 1 cup sweet milk, a teaspoonful each ginger and al spice. Heat until butter melts, add a teaspoon of soda and flour to make batter. Cook in quick oven." Buck Grove, Ia.

Skunks

BY J. L. BYER.

IN a former issue of Gleanings, Mr. Frank C. Pellett discusses our friend of malodorous reputation the common skunk. Friend Pellett is inclined to think that the skunk is a benefit rather than an enemy to mankind, and naturalists in general may agree with him, as the animal is strictly carnivorous, and I believe to a great extent insectivorous, destroying great quantities of grasshoppers, etc. The skunk occasionally visits chicken yards, and is also very fond of eggs as well as of the chickens.

For the number of skunks that are in the country surprisingly few visits are made to poultry yards, so Mr. Pellett is right when he says that only a very few of the animals learn to kill poultry. But it is as beekeepers that we are naturally most interested, and I dare say that Mr. Skunk has few friends among the fraternity especially if some colonies have been ruined, as has often happened. One peculiar thing, and it is good that it is so, is that when a skunk starts to visit an apiary, it usually goes to the same hive every night and signs soon show his visits. The grass is soiled and the ground in front of the hive is clawed more or less. Often the entrance to the hive is scratched.

The past fall, the skunks were more plentiful than usual, and I heard numerous complaints of their depredations. At the Cashell yard I caught two, but not before the colonies were pretty well depleted of bees.

They are easy to catch. Fasten a a steel trap to the end of a 12-foot pole and place the trap in front of the hive. They may be dragged away and shot or otherwise disposed of. As long as they are not struck while in the trap they will not smell. Keep dogs away or you will have trouble. If a stream is near a convenient way to dispose of them is to toss them into the water and by the aid of a long pole hold them under until drowned.

A friend of mine told me of catching one in front of a hive, and on going to the yard in the morning he was surprised and amused to see how little the skunk seemed to mind having one of his legs fast in a steel trap. Instead of being alarmed or showing signs of pain, he was busily feeding on bees and made no attempt to let up when my friend appeared. He would shove one foot into the entrance, and when the bees swarmed out he would strike and scrape them until they were down on the ground. He seemingly aimed to kill them before eating them, and this scratching explained the appearance of the ground and grass in front of hives visited by skunks.

If one does not wish to trap them, put a little strychnine in an egg in front of the hive visited. That will do the trick, but exposed poison is always a source of danger. I have had reports of skunks doing damage as far west as California.

When in New York State I was told they had done a lot of damage during the past season. Evidently they had a large range of territory, and collectively they must do some injury to the beekeeping industry each season. Unfortunately for the skunk, in the northern latitudes at least, they have a valuable pelt, and they are persistently hunted, so are not apt to increase in numbers; in fact, it is doubtful if they will hold their own. One of the common ways of getting their pelts is to find their dens in the winter (skunks are gregarious in their habits), place some carbon-bisulfide in the mouth of the den and then tightly close all holes with earth. The next morning the skunks are dug out and they may be handled without any offensive odor whatever.

Markham, Ont.

A FIELD DAY GROUP IN TENNESSEE

A GROUP OF TENNESSEE BEEKEEPERS AT THE MEMPHIS FIELD MEET

South African Beekeeping

A recent issue of the Farmer's Weekly, a South African paper, had a two page article on bees and apiculture. A large portion of this space was devoted to extolling the virtues of honey and its value as food. In another issue of the same paper, one of its subscribers discusses the beekeeping situation. Foul brood is unknown in South Africa, and the writer advocates the importation of Italian queens into that country only on a limited scale and suggests that the Government quarantine such queens and have same examined before they are turned over to the beekeeping public.

AMERICAN BEE JOURNAL
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA

PUBLISHED MONTHLY AT
1st Nat'l Bank Bldg. Hamilton, Illinois

Entered as second class matter at the Hamilton, Illinois, Post-office.

C. P. Dadant, Editor
Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

IMPORTANT NOTICE.

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THE WRAPPER-LABEL DATE indicates the end of the month to which subscription is paid. For instance, "dec16" on your label shows that it is paid to the end of December, 1916.

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THE EDITOR'S VIEWPOINT

Sweet Clover vs. Ragweed and Hay Fever

In Gleanings for July 15, our friend and contributor, Mr. J. E. Crane, has a paragraph entitled: "Let sweet clover kill out the weeds." When we see the numerous sufferers of hay fever during the months of August and September and realize that the main cause of that trouble is the pest "ragweed", which infests our stubble fields, our roadsides and our pastures we see the need of repeating: "Let sweet clover kill out the weeds." Sweet clover does kill out the ragweed where it is given a chance and we hope every man who has any thing to do with weeds will help this work along. Sweet clover is easily eradicated when not wanted, for it is a biennial and does not make seed the first year. It produces honey and good cattle feed while the ragweed is of no use to anyone and injurious to many.

Screen Wire for Uniting

One of our subscribers reports success with uniting colonies by means of wire screen. One colony is placed over the other the same as is done by the newspaper plan, screen wire being substituted for the newspaper. In 24 hours the screen may be removed and the two colonies will unite peacefully.

It Pays to Advertise

Our front cover gives a good representation of the honey exhibit at the Iowa State Fair which won the sweepstakes prizes in 1916 for being the best exhibit. Incidentally Bert A. Brown, a Des Moines beekeeper took orders for a lot of honey at the fair, and got over $100.00 in prizes. With the active co operation of his wife, Mr. Brown has gradually increased his number of colonies of bees to the point where, if he chooses, he may give up his position in a large clothing store and be independent. Need we say that probably as large a factor as any in his success has been his forceful advertising?

More About Packing Bees

I am much interested in your article in the American Bee Jounral for September on outdoor wintering and packing. My bees are kept about 100 rods from my residence and the labor of hauling 60 or 70 colonies to my cellar and then back to the yard year after year has induced me to try outdoor wintering.

My yard is located on a steep side hill facing the south and is well protected from cold north winds, so that bees ought to winter with little protection. You speak of using straw mats. I have never seen any of them and wish you would advise me where they can be bought and the price. I have just received a sample of flax board ¾ inch thick. This board is cut to fit the top of the hive and placed over the brood frames, but like the straw mats it is a stranger to me. I would like your answer to a few questions:

1st. What depth of super do you recommend to fill with packing? 2nd. Do you consider chaff as good as leaves for packing? 3rd. Would you consider my bees safe with mat and super of packing and the entire hive wrapped with tarred felt? 4th. What depth of bottom board do you use and how much open space for ventilation? 5th. Would you recommend packing each colony separate or place several in a winter case?

This letter raises several interesting questions which have been asked by others. For that reason I have thought best to reply through the Journal.

Our straw mats are home-made. The word "straw" is a misnomer in this case, as we use "slough grass" which grows plentifully along the low lands of the Mississippi River. If we are not mistaken, this grass is called "spartina cynosuri d s" by the botanists. It is tougher than rye straw and lasts a long time. Our reason for using a mat is that, while it covers the frames, it is not air-tight. The flax board ¾ inch thick is certainly good, the only objection we have to it being its stiffness. However if it may be laid flat over the combs it ought to be as good as the mats. Mats are used a great deal in Europe, to protect cold-frame hotbeds in frosty nights and we use them ourselves for that purpose. This is what gave us the idea of using them over the combs. We keep them on the hives, winter and summer for they turn off the rays of the sun as well as they protect the bees from the cold. The making of these mats is described on page 173 of Langstroth Revised.

Question 1. An ordinary shallow super filled with leaves is undoubtedly deep enough.

2. Chaff, cork chips, sawdust, shavings, old woolen carpets, even newspapers are good to absorb moisture in the super. The newspaper, however, would be gnawed by the bees. Mr. Langstroth used corn-cobs, tightly packed over the brood chamber. The reason we use forest leaves is that they are at hand and cost nothing but the trouble of gathering them.

3. Yes, tarred felt is very good. We would leave part of the front free, but it may be advisable to wrap the entire hive, in your climate, which is much colder than ours.

4. We have never used a deep bottom board, but the bottom board of Dr. Miller may prove good when there is a serious loss of bees that might clog the entrance. We usually leave the entire entrance open unless the colony is under average strength.

5. We prefer not to move any of our colonies for winter. Judging by what I have seen, the large winter case is not very popular, except in very cold climates. In Vermont, Mr. Crane and others use a chaff hive and in this way the lower part of the hive remains packed all the year round.

There is no royal road to wealth and no positively faultless method of wintering bees. The greatest fault with our method is the soaking of the leaves if there are many winter rains and the roof does not project sufficiently. But even then a frosty windbreak is better than a thin hive without protection. Hard winds cause depredation of heat and our method protects the bees against them. The best argument in its favor is our success in wintering.

The Sweet Tooth

A statement of the candy business in Iowa, which recently appeared in the newspapers places the consumption of candy in that state at $2.75 per capita and ice cream at $1.50 per capita. Honey is often said to be a luxury even by the beekeepers, but surely it is no more a luxury than candy and ice cream. The population of Iowa is approximately two and a quarter millions. According to the above estimate they consume more than ten million dollars worth of candy and ice cream annually. From the above showing it is very evident that with proper attention to marketing, Iowa people would buy at least ten times the amount of honey now sold in that state. Iowa is probably fairly representative of the country at large in the consumption of candies and other sweets, and the amount of such products sold indicates something of the possibilities of the development of the honey markets.

The fellow who waits for a demand for his product, no matter what it is, never gets the best prices. It is the fellow who creates the demand who sets the prices. Eastman with an idea and business push has built up a business in Kodaks which nets millions annually. There never would have been a demand for Kodaks rather than any other particular kind of camera if Eastman had not forced it before the public and compelled attention. When the honey producers use the same business methods it will not be possible to keep up with the demand for good honey. The old scripture proverb about hiding a light under a bushel still applies.

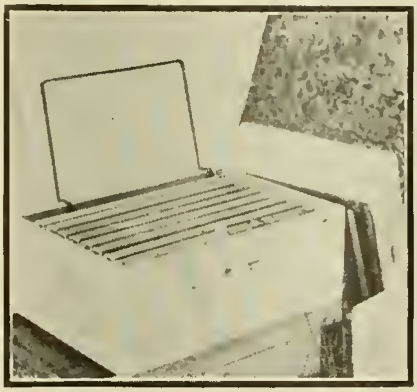
A Good Idea

Members of the fruit grower's associations of Iowa and Nebraska held most interesting joint summer meetings. Instead of following the usual plan, a long automobile trip was arranged to visit representative orchards in both states. At Council Bluffs they were guests of the grape growers at a picnic dinner.

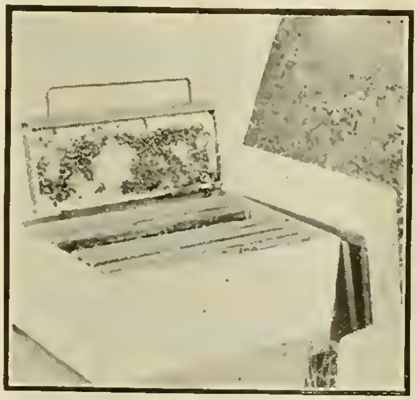
Now that so many beekeepers have automobiles why should not the National be able to arrange for several such trips in different parts of the country. In many places a circle of three to five hundred miles would make it possible to visit several large apiaries and to learn something of new conditions and methods. The beekeepers of Iowa, Wisconsin, Minnesota and Illinois already have a joint organization for the purpose of a summer field meeting. They usually meet somewhere along the Mississippi river. There is room for a dozen or more such organizations where the beekeepers of two or more states could get together to their mutual advantage.

A Convenient Frame Support

What beekeeper has not found it trying to the patience to find a convenient place to support frames when making the spring examination of the apiary? It often happens that the first frame removed will be left out during the examination of the remaining frames in order to leave room for easy movement. If the queen happens to be on this first frame she is in danger of being brushed off when it is set down in the grass. Combs are often damaged from falling, or they are in the way of the operator. L. D. Leonard, of Minnesota has a very convenient little frame for this purpose. It is light and inexpensive as will be seen by the pictures. It is made of light strap iron with staple-shaped ends which fit nicely on the side of the hive. There is just enough slope to give the frame support without danger of falling, thus keeping it very nearly in a natural position. There is an upright point on each iron which supports the frame but yet makes it impossible to crush a single bee when the frame is put in place. When one sits down to open the hive this support can easily be attached to the opposite side where it is entirely out of the way yet within easy reach. This should be especially convenient for queen breeders and experimental apiaries where frequent examination is necessary and where there are seldom heavy supers to be removed. Almost any beekeeper will find it useful in the spring of the year when the early examinations are made.



Doctor Leonard's Frame Holder



The Frame Holder with Frame in Place

Honey Market Conditions

Indications were, early in the season, that honey prices would be low, as low as last year at least, owing to the fact that a large amount of honey had been carried over. This combined with the fact that white clover regions were favored with an excellent flow tended to influence beekeepers in the white clover section at least, to sell their crop as early as possible, even at a low figure.

The governing feature of the honey market is supply and demand, and most of the larger honey markets get the bulk of their supply from the more important honey producing states of the west. A shortage, therefore, in western crops tends to make a shortage in the larger markets with the result that honey prices instead of being lower would range better. The sale of a considerable portion of the California crop at a figure in advance of that secured last season shows which way the price tendency is.

Then too, there is a shortage of fruit this year. Fruit crops for the country are far below normal. This will cause, if it has not already, a better price for fruits, and as a consequence, a slightly better demand for honey.

Comb honey producers seem to be possibly a little too numerous for the most economical supplying of the demand for this article. Being higher in price, comb honey is just that much nearer a luxury, while the cheaper extracted honey approaches a staple necessity as prices of other foods advance.

Winter Cases for Northern Latitudes

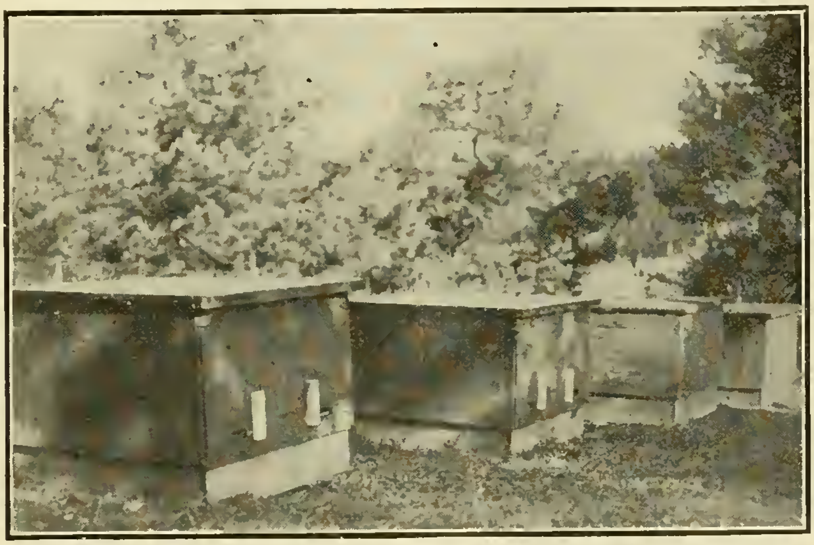
Methods of Packing Which Have Stood the Test in Ontario

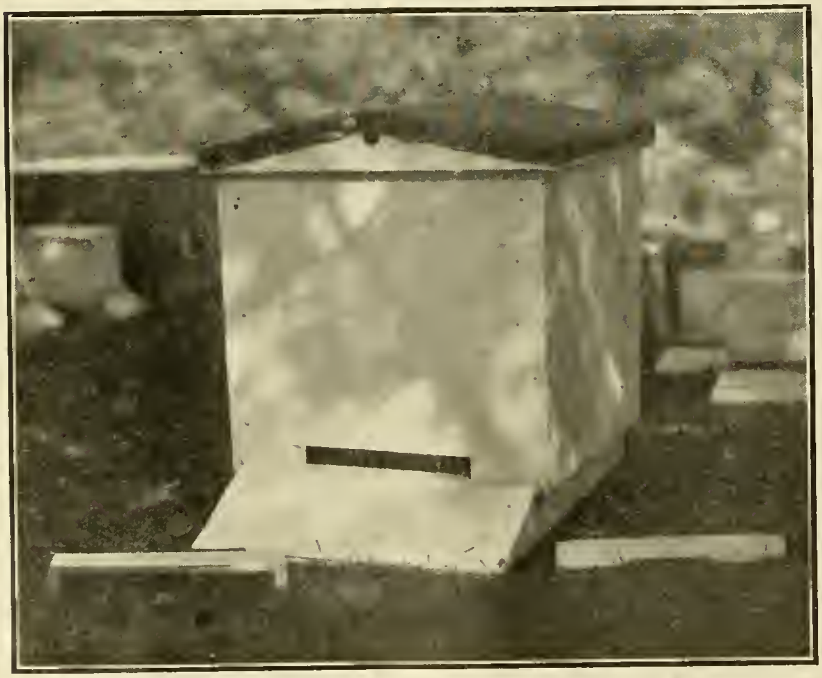
Outdoor wintering is growing in favor with northern beekeepers. Many who formerly practiced cellar wintering are adopting some kind of packing case and leaving the bees in the same position all the year through. In Ontario this tendency is especially marked for many of the extensive beekeepers of that province now winter outside entirely. The quadruple case which holds four colonies is the one in most common use. The illustration shows a row of these cases at the college apiary in Guelph. This large winter case has several advantages; four colonies are packed in a single case, thus keeping down the expense per colony and also giving each colony the additional warmth from the others. Much has been written about these cases of late and they are coming into use in many localities in the United States as well as Canada. When the writer visited the A. I. Root apiaries last winter he found about five hundred colonies packed in these cases in the rear of the factory. The bees from the various outyards had been brought in and packed at the home apiary where it was more convenient to pack all together rather than to prepare them for winter in small yards.

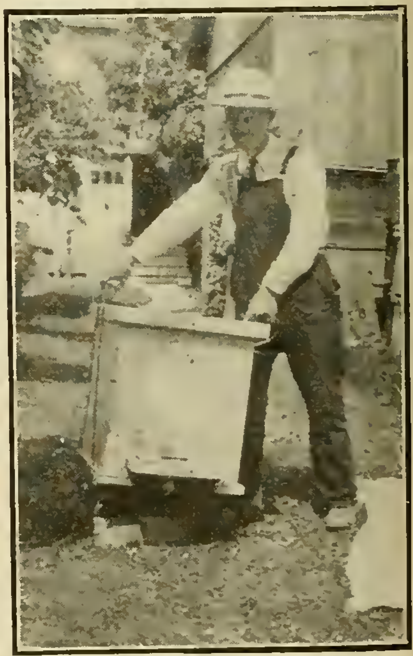
On a journey through Ontario the past summer long rows of these cases were seen in the rear of many apiaries. While the case is so large that it is heavy and rather inconvenient to handle it is still the most popular winter case in use.

THE KROUSE SINGLE COLONY CASE.

Another case that is to be found in several localities in Ontario is the case used by F. W. Krouse, President of the Ontario Beekeepers' Association. I do not know whether the case was original with Mr. Krouse but the writer saw so many more of them in his apiaries than elsewhere that it comes quite natural to call it the Krouse case. This holds but one colony and in the Krouse apiaries they are left in place the year around. The case is high enough to hold a double story hive. Many of the Krouse bees are on jumbo frames which are about equal to the Dadant frame in size. In early spring the packing is removed down to the level of the top of the hive to permit of examination of the colony, but packing below that point is left all summer. When the second story or super is put in place the cover of the packing case is put on again thus giving the hive excellent protection against the cold days of spring. This case is in effect a double walled hive since the ordinary hive


QUADRUPLE WINTERING CASES IN THE ONTARIO AGRICULTURAL COLLEGE APIARY AT GUELPH


THE KROUSE WINTERING CASE


IRONS FOR LIFTING THE HOSHAL CASE

is used for the inner one and six or eight inches of packing left between the walls. Mr. Krouse is very enthusiastic about the advantages of this case and all his colonies which now number near five hundred, in several yards, are in these single colony cases. Aside from the increased expense necessary to make a separate case for each hive there are some decided advantages in his method.

The writer uses a packing case which holds two colonies at his Iowa apiary. This is made from a dry goods box because of the greater economy of cost. Two colonies occupy the same hive stand the year around. Dry leaves are used for packing. This cheap case is described fully in Productive Beekeeping.

THE HOSHAL WINTER CASE.

Mr. A. E. Hoshal of Beamsville, Ontario has a winter case unlike anything else which the writer has seen. This is a single colony case and he uses both metal cases and wood. Soaring prices caused by the war makes the metal prohibitive just now but the cases which he made before the advance in price were very reasonable in cost. Mr. Hoshal uses the Heddon divisible hive and gets good results.

The three pictures show how the cases are packed and unpacked with the same material year after year. He uses planer shavings and after the colony is unpacked in spring replaces the packing material in the case and piles them up against the outbuilding as can be seen in the photo.

These cases are very light when made of galvanized iron and if a good quality of material is used will last for many years. Mr. Hoshal is an extensive producer and has everything arranged so that he can pack or unpack his colonies in a minimum of time. The first picture shows the light lifting irons by means of which he lifts the case onto the sheet which is to catch the packing material. The next one shows the case on the sheet ready to be unpacked. The third picture shows how easy the case is removed and the fourth shows the empty case behind the hive and the material on the sheet. The packing is now dumped into the empty case, the cover replaced and the case added to the growing pile. When time comes to prepare the colony for winter it is an equally simple operation. The packing is dumped onto the sheet and the case placed over the hive, when the packing is again dumped into the case and carefully packed about the hive, the covers are placed and all is snug for winter. For packing a colony with the minimum of labor the Hoshal is the simplest the writer has yet seen.

MR. HOSHAL READY TO REMOVE THE PACKING FROM HIS METAL WINTER CASE

THE HIVE IS LIFTED UP AND THE PACKING FALLS OUT ON THE SHEET

The Yellow Peril

BY CHARLES DUFF STUART.

(Illustrations by John R. Douglas.

We in common with neighbor-beekeepers are suffering from a visitation of yellow jackets. The plague descended upon us about July 1st. We traced them to their nest which hung like a Chinese lantern under the eaves of our house, and destroyed it utterly, by dislodging and dropping it in a bucket of scalding water held just beneath. The interior of the nest was full of young larvae, ranged symmetrically in cells not unlike the cocoon of the honey-bee cell, after the wax is melted away.

But this wholesale slaughter only temporarily checked the enemy. They re formed their lines, so to speak, called out the reserves and came upon us again.

At first they seemed satisfied to carry away the dead bees lying on the ground in front of the hives, but as their numbers increased they grew bolder and attacked live bees on the landing boards and even entered the

THE HIVE, EMPTY PACKING CASE, AND PACKING MATERIAL FROM THE HOSHAL WINTER CASE

hives themselves. Full colonies seem to be able to defend themselves, by the very superiority of numbers. One beekeeper in observing the relative strength of the opposing forces estimates that six bees are required to vanquish one yellowjacket.

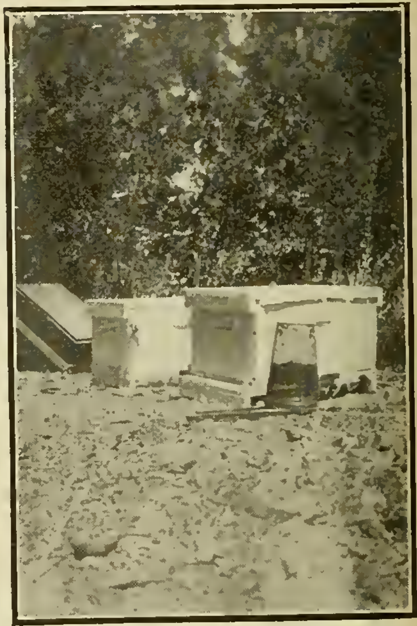
That ratio is probably due to the armor-like quality of the enemy's yellow jacket which apparently is invulnerable to the sting of the bee. On the other hand, the yellow jacket finds it a simple matter to seize a bee, sever it with a sawing motion, and fly away with the meaty portion which also contains the honey-sac, leaving the head and front legs of his victim wandering aimlessly over the frames.

But in a full hive the bees often ball the invaders as they do a queen; then other yellow jackets hurl themselves upon the "ball" until the front of the hive presents a veritable battlefield.

It is the weaker colonies and the nuclei for mating queens that suffer most. It is a rare occurrence to open one of these and not find the inmates battling for their very lives. And there is no doubt that this condition has been the prime cause of the small percentage of matings of virgin queens. Out of twenty-four virgin 23 were lost in a single week.

A resourceful member of the Bee Club suggested the use of an ordinary fly trap baited with raw meat, and already one member has six in operation, another three and another 2, which are filled with yellow jackets and emptied once and sometimes twice each day. We have just been obliged to add two more to the number already in our apiary adequately to cope with the situation.

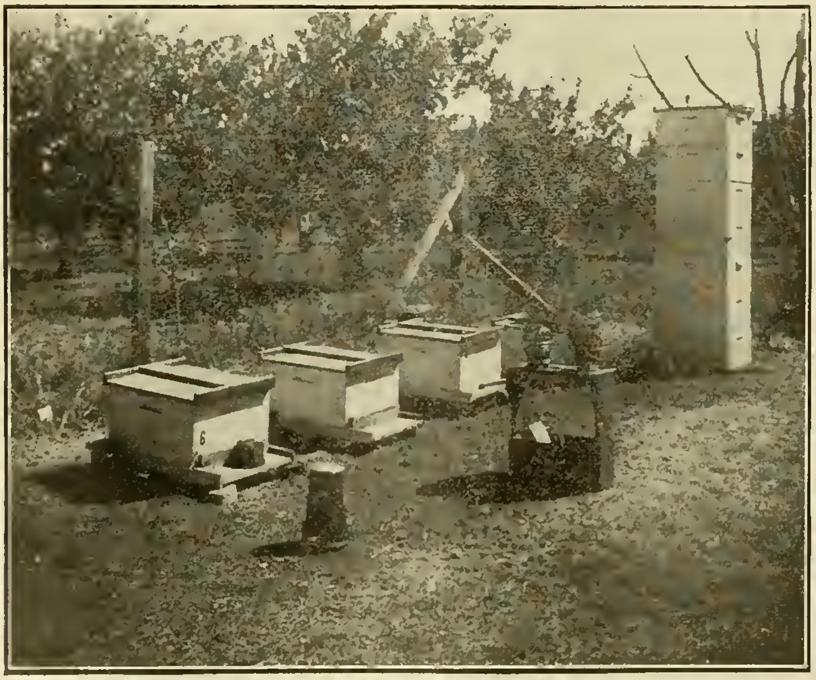
Mr. McCullough's $1.50 fly trap—for years the family joke because it had never been known to catch a single fly—is being emptied of yellow-jackets twice in a single day. The trap is eighteen inches tall and holds about three quarts when full.



No. 2.—Protecting a Queen-Mating Nucleus

But it required a doctor scientifically to strike at the root of the evil (the breeding-nest) by enforcing a species of birth control. This method provides for a generous saturation with arsenate of lead of each piece of meat (preferably salmon) carried home to the young by the yellow jackets. The sudden decease of a neighbor's dog that had eaten too freely of the dead yellow jackets lying about, proves the efficacy of the treatment. But the best proof was the depleted condition of a captured nest. Scarcely a yellow jacket remained. Dr. Douglass also made another discovery which explains the numerous progeny of these pests. In one nest four "Queen" yellow jackets were found, instead of a single queen bee as in the honey-bee brood-nest.

Mr. M. C. Richter states that in England, especially in and around London, the yellow-jacket-pest is prevalent and is the most annoying enemy with which the apiarist has to



NO. 1.—CLEANED OUT BY THE YELLOW JACKETS

contend.

Illustration No. 1, shows a stack of hives that once contained flourishing nuclei. Of the four hives still remaining on the ground only one now contains bees, the others having been cleaned out by yellow jackets. In No. 2, a trap has been stationed near a nucleus containing a virgin queen, in the hopes that the bait will lure the enemy away from the entrance, at least long enough to give the queen an opportunity to take her nuptial flight unmolested.

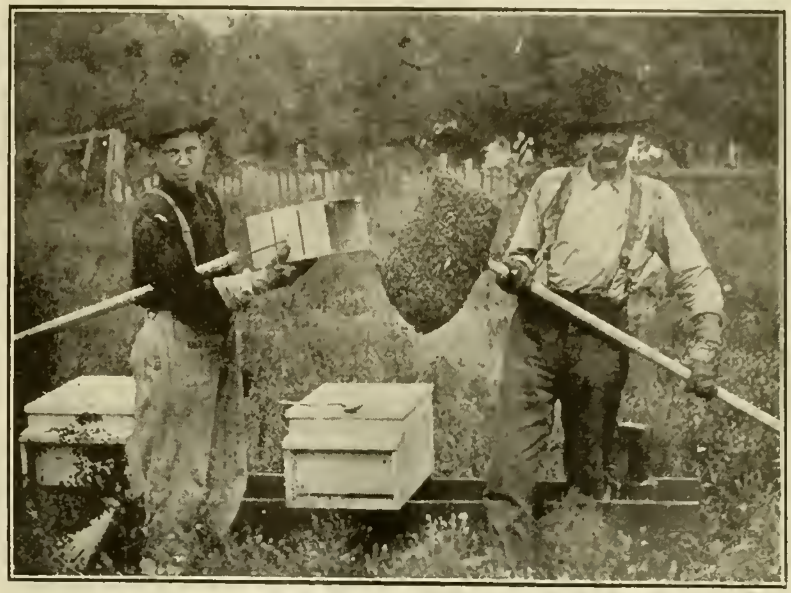
In one of our colonies which had become weakened owing to the presence of a drone-laying queen, the harassed bees, together with a fine new queen, deserted brood and stores to escape the pests. In twenty four hours devastation was complete. Not only were the stores carried away by robber-bees, but the brood was torn from the cells by the yellow jackets and the floor of the hive reminded one of confetti-strewn streets on New Year's Eve, so thickly was it covered with particles of cell-cappings.

We are rendering the bees all the assistance possible, for it looks as if we are fighting a very real yellow (jacket) peril.

A Box Swarm Catcher

Most beekeepers still prefer to catch swarms by using a ladder, saw etc., and by cutting down the branch to which the bees are suspended. A large number also use the swarm catchers advertised so generally. Messrs Roberts and Hartwick, two Illinois beekeepers did not like the ordinary swarm catcher, nor did they like the exertion connected with "shinning up trees".

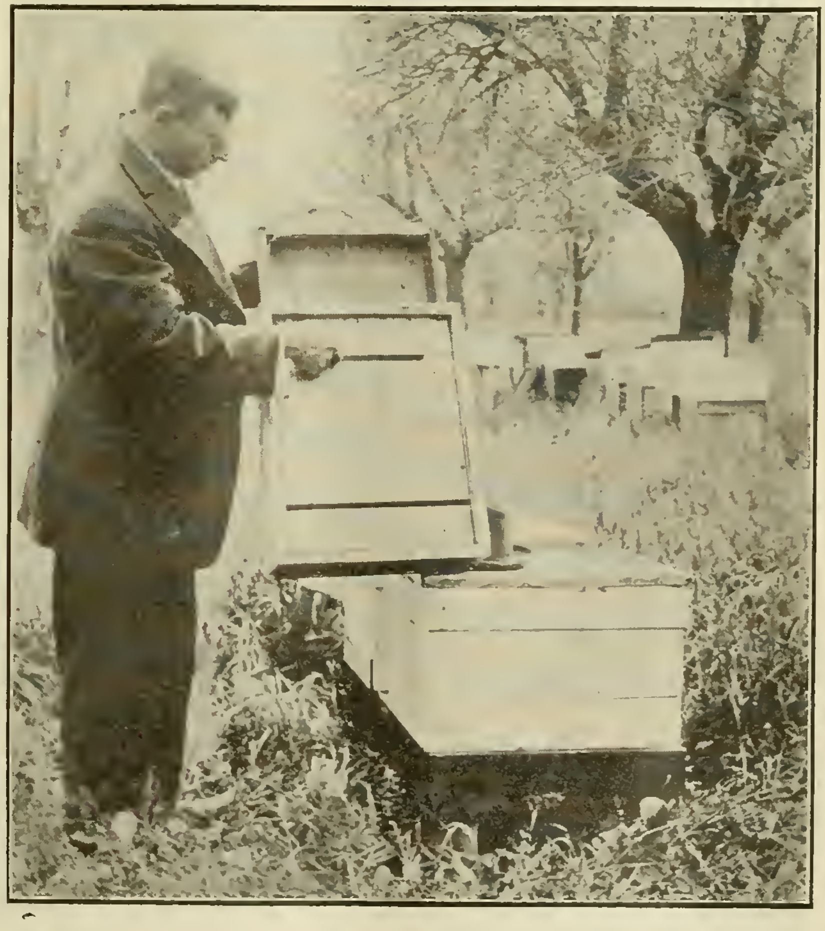
They have devised a swarm box (see illustration) which by means of a pole is inserted against the swarm cluster. The box is made hollow and long. They assert that the swarm will immediately take advantage of this improvised "hollow tree" and cluster in and about it, when they can be lowered and shaken in front of a beehive.



THE ROBERTS & HARTWICK SWARM CATCHER IN USE

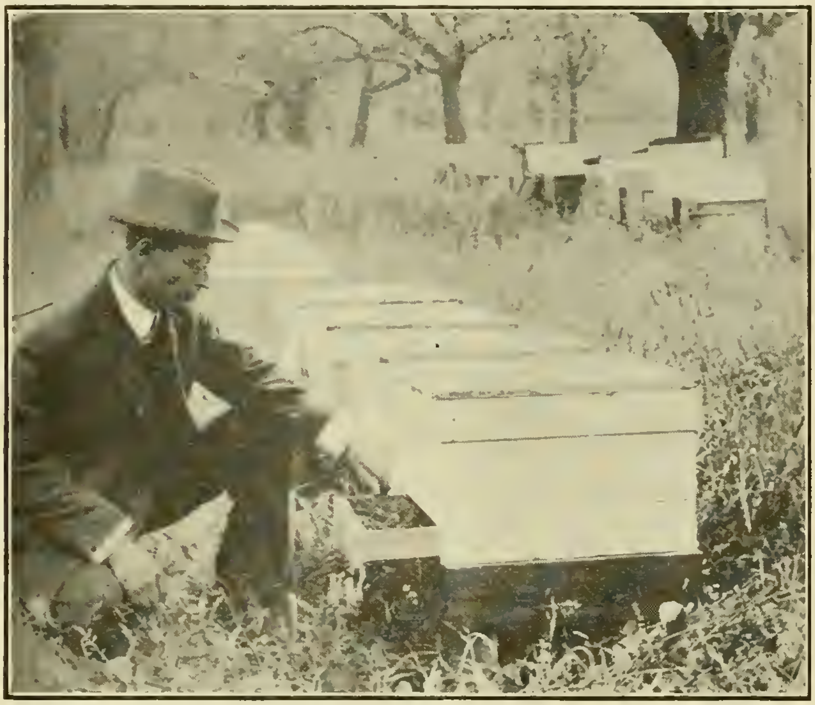
A Novel Feeder

For years past there have been feeders and feeders, but it has remained for W. A. Chrysler, of Chatham. Ontario to make one which combines the good features of most of the others. There are feeders which will take enough feed at one time to provide for winter, but the hive must be opened in order to replenish them, which is bad when there is a dearth and robbers are about. There are others, like the Alexander feeder which can be replenished without opening the hive but most of them hold but a small quantity of syrup since they are designed for stimulative feeding. Mr. Chrysler's feeder will hold a liberal amount of feed if it is desired to make a quick job of it or a small quantity can be fed each day as circumstances indicate. As will be seen at a glance in the picture on the opposite page, the feeder is made by means of a deep double bottom with a partition across to divide it into two separate compartments. One is left wide open to serve as an entrance to the hive and a drawer just right to fill the other is made to hold feed. The lower photo shows the two slots in the bottom board. One slot opens into the feed chamber and the other into the open entrance. This combined feeder and bottom can be left in place the year around and when feeding becomes necessary for any reason it takes but



W. A. CHRYSLER AND HIS BOTTOM FEEDER SHOWING SLOTS, ONE TO FEED AND THE OTHER TO ENTRANCE a moment to supply it.

There are fewer advocates of stimulative feeding every year. More and more practical beekeepers are coming to believe that with a sufficient quantity of stores in the hive, the bees can be depended upon to expand the brood nest as fast as is desirable. However, there are times when it is necessary to practice this method of feeding to build up the nuclei or to maintain normal conditions in queen rearing apiaries. Every well regulated apiary requires some attention in the way of food for winter supply or to avoid shortage at other seasons. The Chrysler feeder is convenient and serviceable although the cost is rather high. However, when it is remembered that it serves for both bottom and feeder this objection is not important.



CHRYSLER'S BOTTOM FEEDER IN PLACE, WITH FEED DRAWER OPEN.

* * *

No. 21.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(*Photographs by the author.*)

THE BITTERWEED—*Helenium Tenuifolium*

My first experience with bitterweed honey was in South Missouri in 1904 or 1905. There had been a good flow from white clover followed by a dearth for a time and the unfinished sections were filled out with bitterweed. The sections looked very nice and a northern beekeeper who had recently settled near the town of Salem innocently sold his honey to the townspeople. The next time he came to town there were numerous persons looking for him and he found it necessary to take back most of the honey he had marketed on his previous visit. The honey from this source is so very bitter that a very little of it will spoil a fine crop of the best white honey. A few cells are sufficient to make a whole section absolutely unpalatable.

On a recent visit to Tennessee I was very much interested in this plant which grows freely along roadsides, in barnyards and similar places, much as dogfennel or mayweed does in the northern states. The range of the plant is given as from Arkansas and Texas to North Carolina. It probably does not appear to any extent north of Tennessee.

Chas Mohr says of it: (Plant Life of Alabama page 54) "The bitterweed, orginally from the sunny plains west of the Mississippi river south of the Arkansas valley, was first observed in Mobile in 1866. It has spread along the enbankments of the railroads to the mouth of the Ohio river, literally covering in many places the waste and uncultivated grounds, and reaching out along byroads and borders of fields and woodlands. In its northward spread it has largely taken the place of the mayweed (Anthemis cotula), a European weed of early introduction."

Regarding honey from this source J. J. Wilder says: (Am. Bee Journal Vol. 54 page 410) "It is truly a nectar-laden plant. Though it does not grow in great fields as yet, bees will store from 20 to 35 pounds of surplus per colony from it. Its flowers are of a deep yellow; the honey, light yellow, heavy body, soon granulates when extracted. It is very bitter; in fact it is about as offensive to the palate as quinine. In most sections of the south the cotton plant begins yielding two or three weeks before the bitterweed and if it were not for the well established fact that bees do not desert a honey plant for another as long as it yields well, nearly all the summer and fall honey would be unfit for market on account of the bit-

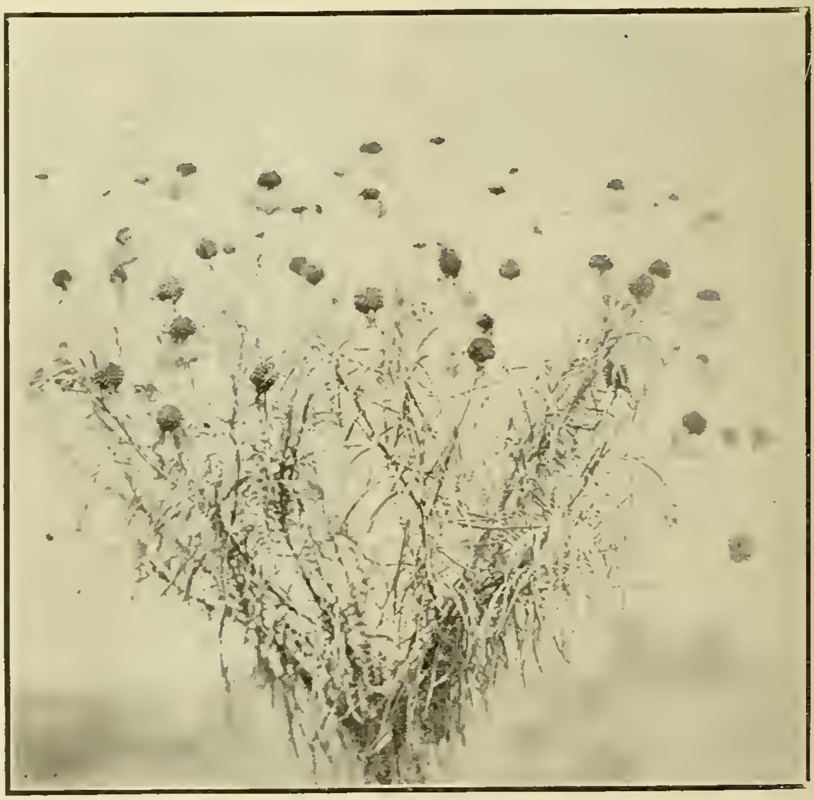


FIG. 88.—A SINGLE STALK OF BITTERWEED

terweed. In sections where the cotton does not yield much, the honey is all bitter and a small amount of it will ruin a tank of good honey. Bitterweed is also a great pollen plant, furnishing abundance of bright yellow pollen throughout its blooming period. Even the stems and foliage of this plant are intensely bitter and no animals eat it."

Doctor Pammel in his book on "Poisonous Plants" cites a quotation which states that it has been reported as fatal to horses and mules in several of the gulf states. It is said to contain a narcotic poison and to be the cause of bitter milk.

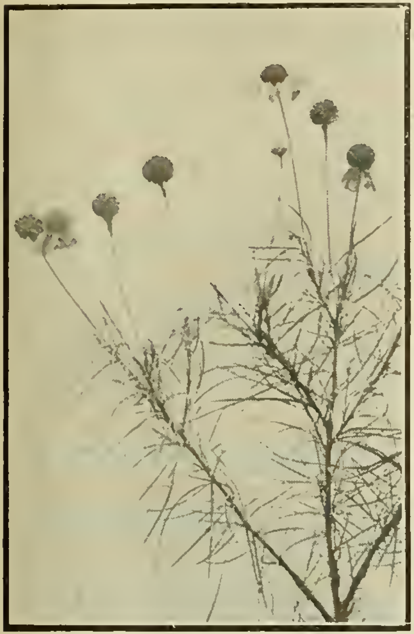
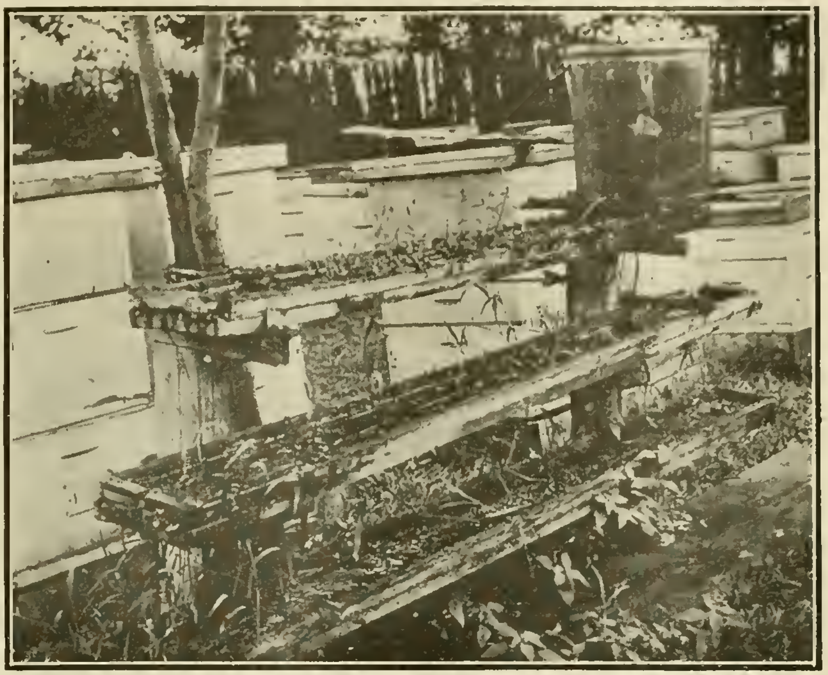


Fig. 89.—Bitterweed Blossoms



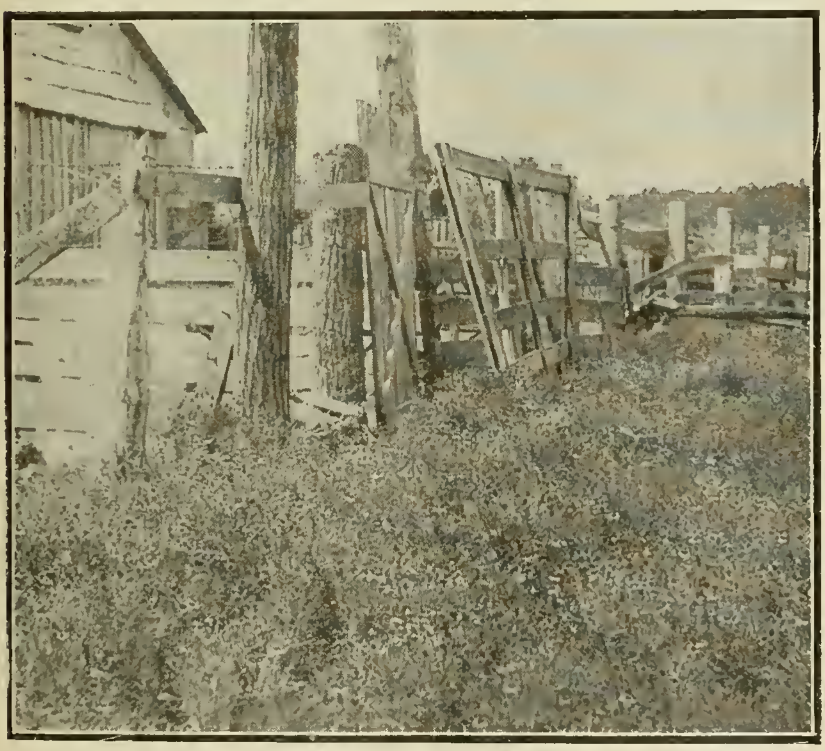
WATERING DEVICE IN THE J. M. DAVIS APIARY

A relative of this plant, the northern sneezeweed, Helenium autumnale is also a good honey plant and probably less bitter than the southern or narrow-leaved sneezeweed just described. Neither, however, can be said to be desirable additions to the honey producing flora because of the danger of spoiling good honey from mixing with it. The northern sneezeweed is found in various localities from Connecticut to the Dakotas and southward. It is also found in places in the Rocky Mountain states.

The bitter honey seems to be as good as any for brood-rearing and where present the beekeeper should use care to avoid mixing it with his marketable product and use it for feeding the bees. The bitterness is said to come from the pollen grains present in the honey and to improve greatly with age as the pollen grains settle to the bottom of the container.

Atlantic, Iowa.

Copyright: 1916, by Frank C. Pellett.



BITTERWEED IN A TENNESSEE BARNYARD

A Unique Watering Device

Too little attention is paid to the water supply in the apiary. Many a beekeeper has found his neighbors hostile because of annoyance of bees about rain barrels, watering troughs, open wells etc. If a sufficient supply of water is available near the hives the bees will seldom be troublesome elsewhere. It must be constant, however and should be available from early spring until freezing weather in fall. Otherwise the bees are quite likely to seek a supply elsewhere and once having found it, to continue to frequent the same source. There are numerous plans for providing water for the bees without danger of drowning. The one shown in the picture requires frequent filling but there is little danger to the bees and the supply is sufficient for thousands of bees to drink at once. The picture was taken in the apiary of Mr. J. M. Davis, of Spring Hill, Tennessee, at the time of the visit of our staff correspondent. As will be seen there are three very shallow troughs, one immediately underneath the other. The large can at one end of the upper trough has a small outlet which lets the water drip out slowly. There is an overflow from the upper trough into the one below and from that to the lower one so that there is water in all three troughs at all times. As can be plainly seen in the picture, grass is growing in each one of the three shallow receptacles. This watering place has been in use in the Davis apiaries for many years and is all moss grown. Although Mr. Davis has a large open well a short distance away and the usual bucket and troughs the bees were not noticed about the well. An abundant supply in the immediate vicinity of the hives meets their needs and saves them the necessity of longer flights in search of it. With a regular supply in the apiary the beekeeper will find less annoyance to himself and to his neighbors and at the same time will save countless bees from drowning as is the case where no such provision is made. Whenever brood rearing is in progress the bees require large quantities of water.

Frame Wiring and Wire Imbedding

The best beekeepers and probably a majority of all keepers of bees use full sheets of foundation in new brood frames, and all such frames, are wired to prevent sagging in the foundation, with resultant drone comb caused by stretched cells.

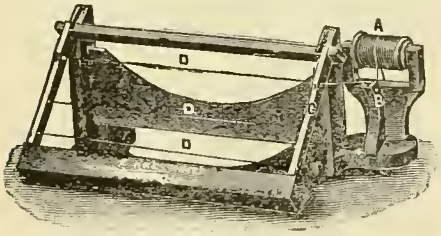


Fig. 1.—A Frame Wiring Device

Probably a majority of these beekeepers still do all wiring of frames by hand. For anyone having much wiring to do it is well worth the expense to get or pattern after a form for such wiring. Fig. 1 shows a wiring device. Fig. 2 is a similar device arranged with rollers so as to make the work of wiring a small job comparatively.

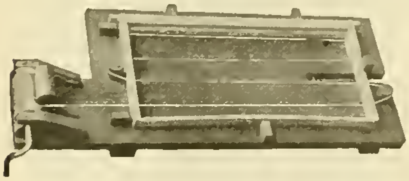


Fig. 2.—Another Wiring Device

The spur imbedder for fixing the wires to the foundation has for years been in common use. It is however, far surpassed by electrical wire imbedders which not only imbed the wires but melt the wax over them, and in this way fix such wires permanently. This is especially important where it maybe desired to haul frames with full sheets to out apiaries or to ship them if necessary.

When the beekeeper is in reach of a good electric current an electric imbedder as in Fig. 3 may be arranged.

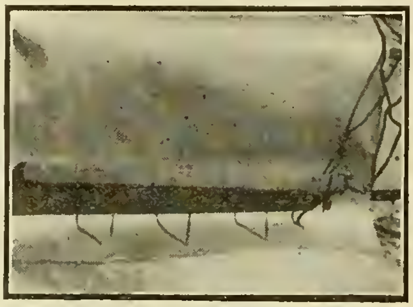


Fig. 4.—Two Dry Cells abe Sufficient With This Wire Imbedding Device

It consists of a rheostat for regulating the current, connecting wires and a form on which the foundation and wired frame is held. By means of small protruding tacks in the side bars to which the ends of foundation wires are attached the current is applied to the four wires at one operation.

Fig. 4, the invention of an Indiana beekeeper is much more practical in that it takes only two dry cells to produce the current. Instead of all four wires being fixed at one time, the five copper prongs come in contact with each wire, thus shortening the circuit. It is remarkable what thorough and effective work, this home made imbedder will do, and with what ease it is done.

A New Hive Cart

Many of our readers, especially among the ladies find it difficult to handle the heavy supers when the apiaries are run for extracted honey. With a power-driven extractor the work of honey production is not too laborious for anyone if the supers could be carried in by machinery. Mr. Frank C. Pellett has a hive cart in use in his apiary which is higher than the top of the second story of the hive. The past summer most of his colonies were four and five stories high, all full depth Langstroth supers. With the cart shown in the photo it is not a heavy lift to slip the supers onto the cart when ready for removal or for the purpose of examination. If it is necessary to get to the bottom of such a hive when it is

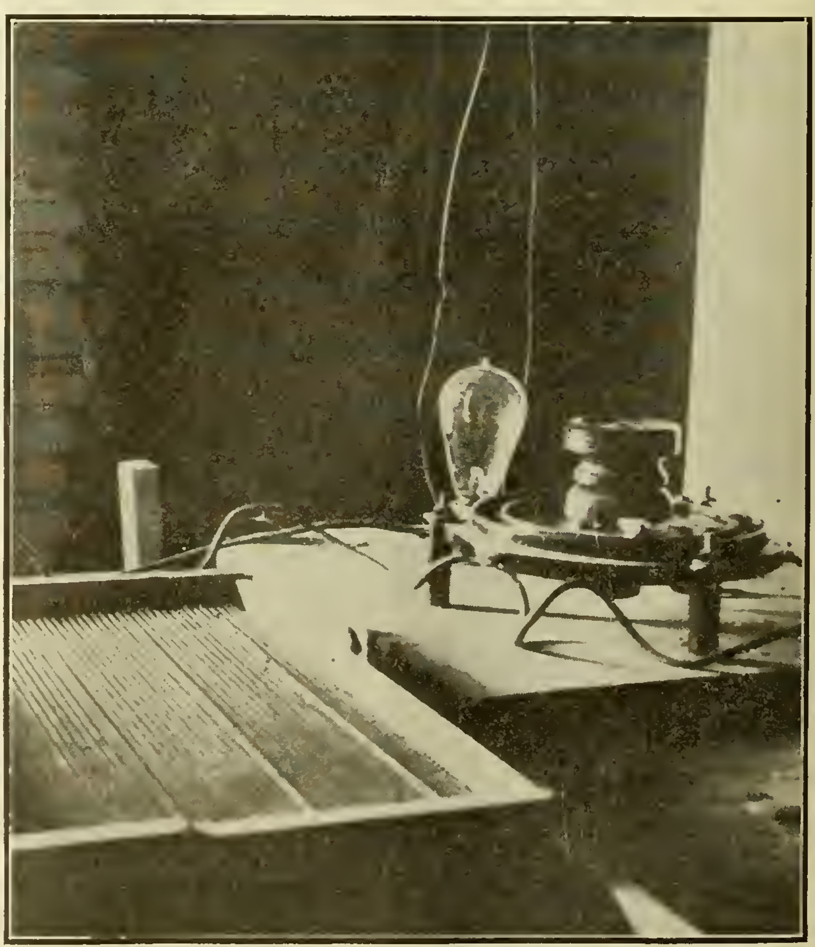


FIG. 3.—WHERE CURRENT IS AVAILABLE A RHEOSTAT ENABLES ALL FOUR WIRES TO BE EMBEDDED AT ONE OPERATION

nearly full, it is a heavy job to lift all the supers to the ground and later replace them again. One picture shows the cart with the derrick laid down when the cart is used as an ordinary hive cart. In the second picture the derrick is raised so that by means of a crank the upper super can be lifted clear of the hive and allowed to hang while the next super is examined. If more than one super is to be removed for examination such as are necessary are slipped onto the floor of the cart while those below are removed. The derrick works easily and the clamp which holds on the principle of the ice tongs holds a full or empty super with safety.

While the work of removal and replacing the supers by this means is somewhat slower than when the operation is performed by mere physical labor, it is possible to handle the heaviest colonies with little strain on the operator. A frail woman or a boy can readily exert sufficient force to remove a full super, swing it into the cart, lift the next one into the air and examine the one beneath when necessary.

As will be seen in the illustration the wheels are well under the back of the cart, thus furnishing a substantial support for the derrick when in use. The derrick is supported so that the hive swings just clear of the back of the cart in lifting but yet will readily swing over when desired to place it on the cart. A single hive can readily be lifted from the ground or the top super of a five story hive can easily be removed.

The floor of the cart is just right for six ten frame supers so that twelve empties can be hauled at one time. Four or five full supers make a pretty good load since it is difficult to push a heavier load over uneven ground.

We believe that those of our readers who think the full supers too heavy for them, will find a cart of this kind of much assistance.

A West India Ramble

BY W. J. YOUNG.

Although the American Bee Journal is published for the interests of the American beekeeper, a few words descriptive of conditions as they exist in the West Indies and other tropical countries will probably interest the reader who is located in the U. S.

For twelve years in Porto Rico the writer was engaged in the production of honey, and where have the twelve years gone?

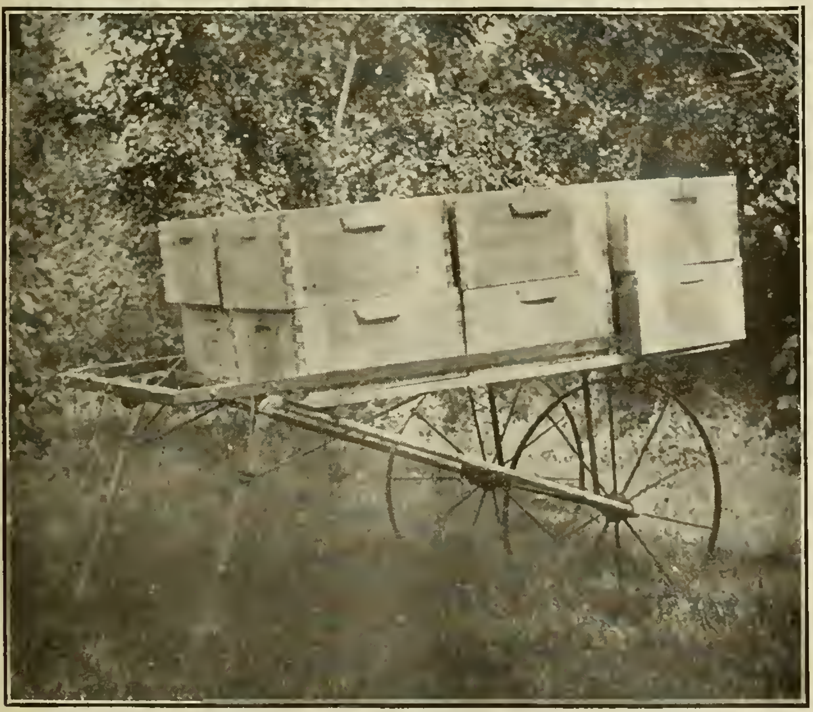
I landed there in 1904 and started out with a very poor idea as to future prospects. Could see no one from whom to ask advice as no one was making the production of honey a business.

I located at first near the south coast close to Ponce, where the bees do not do much. From there I moved to the interior where the bees breed up and bring in honey with wonderful rapidity. The only visible source of honey is wild forest growth. The country when in virgin forest must have been a beekeeper's paradise.

For eight years my annual average crop was thirty thousand pounds, from not over 150 hives. I thought it was a permanent thing but was doomed to disappointment.

In 1913 the natives got the bee fever and tumbled over themselves to get into it. The country became overstocked. I had a chance to sell out which I did. Better to say lost out. I had been run out of business the same way, in Cuba, before locating in P. R.

I had built a good house and did not like leaving it, but it would have been up-hill work to have stayed, with over 800 hives of bees within short range.



THE PELLETT HIVE-CART WITH LOAD OF EMPTY SUPERS

Not only was tropical apiculture a pleasant occupation, but the salubrious climate, beautiful mountain scenery green with vegetation and the mountain streams, always running with pure clear water, were attractions not soon to be forgotten.

Then there was the ocean only ten miles distant and accessible by a good road. A bath in the sea is nice, but better still a fresh water stream in which the bather can soap off and rinse off with the water and atmosphere at just about the right temperature. The extensively advertised porcelain tubs with a complete system of plumbing are a luxury, but for me the mountain stream is far more luxurious.

The reader may think that cracking up Porto Rico like this is a real-estate boost, but it is nothing of the kind. There are advantages besides climate, scenery, and good water, that do not exist in P. R. For English-speaking people who want to live where are the ordinary necessaries of life, any Latin country, even if it is under the American flag, is a good place to keep away from.

But this is not talking bees, or West India ramble. I took the train at Arecibo which is in the north coast, and traveled a distance of fifty miles to Mayaguez, there to take the steamer for Cuba. In many places the railroad is as near to the ocean as is the Southern Pacific in the vicinity of Santa Barbara, California, and lots of beautiful scenery, this time mountain and ocean. It is on the north-west corner of the island that the mountains are close to the sea, and building the road through this section was a difficult and expensive piece of work. In places the tracks are that near the sea that they have to be protected by a concrete wall, and then the road climbs up until the ocean is several hundred feet below. There are two tunnels one of which is at least a fourth of a mile in length.

The country in the vicinity of Mayaguez is overstocked with bees to a greater extent than anywhere else on the island. Healy & Seibert at this place are doing an extensive business in buying honey and selling bee supplies.

On Dec. 6th I took the steamer for Santiago, Cuba, and for unpleasantness it was an experience long to be remembered. Anyone who is unaccustomed to sea travel would think that out on the ocean the atmosphere would be cooler, and the air fresher, but in the tropics the reverse is the case, unless out on deck and on the windward side of the ship. When in the cabin or outside when there is no breeze blowing, the heat, bad air and disagreeable smells are more the cause of sea sickness than the motion of the boat. The ship was an old Spanish tub on which the first class fare was far inferior to second class accomodation on any American or English vessel.

The trip was not as unpleasant as it would have been if in mid ocean. Passing the island of San Domingo the boat kept close to the south shore, and steamed the entire distance by daylight, laying over night at San Domingo City. On the western end of the island the country is level, with mountains in the distance, but after passing S. D. City the mountains are close to the ocean and in places are so high as to pierce the clouds, and everywhere is a dense growth of tropical forest. The land that has been cleared for cultivation is less than 2½% of the entire area.

If ever there was a tropical paradise it is the island of San Domingo, not only for bees, but for all other kinds of tropical farming that is if the country had a good government, but under present conditions it is no place for civilized people.

San Domingo City is an old time place, said to be the first on the western hemisphere to have been colonized. There are a few attractions for which the place is deserving of credit. The city is situated at the mouth of a river and gets the full benefit of the ocean winds. There are plenty of shade trees, which with the original forest growth make the atmosphere cooler than it would be if everything was cleared off.

In the center of the city is a good sized plaza which is equal in beauty to Boston Common, or the Alameda in Mexico City. On the sea front is another beautiful park, the side facing the sea having been terraced, which sets off the entire city, giving it the look of a seaside pleasure resort.

The streets are wider, and the buildings more scattered than in other Spanish-American towns. The ruins of the cathedral that was built by a brother of Christopher Colombus still stands. On board the ship the cabin was so hot that I had been sleeping on deck, but the night that she lay in San Domingo harbor the temperature was cool enough, so that it was possible to sleep in the state room.

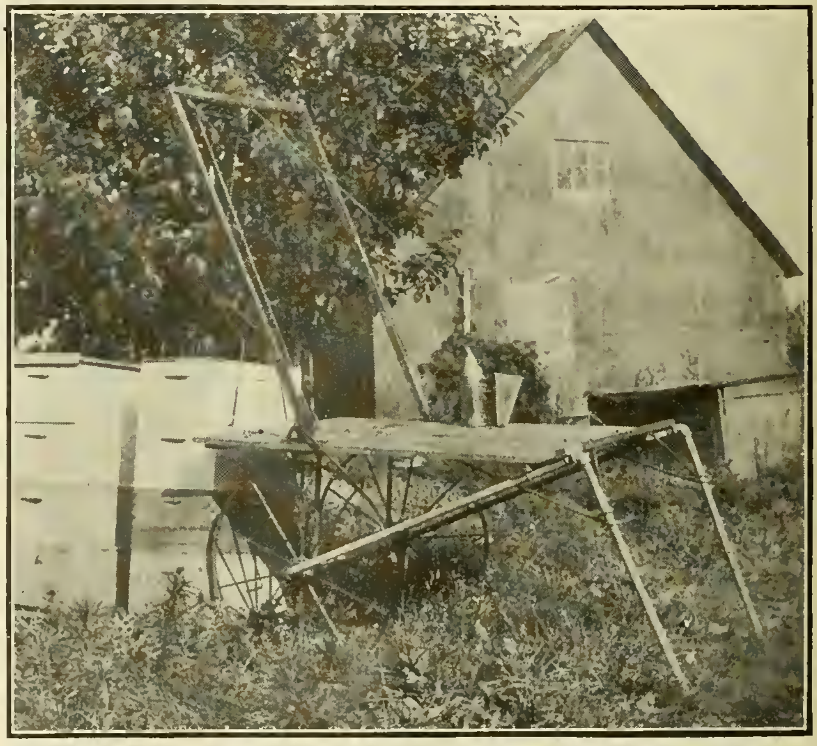
I would have liked to have met some of the bee and honey men, but the ship did not tie up to the dock until a little before closing time, and pulled out the first thing in the morning. In one warehouse on the dock I counted over 200 barrels of honey, and on board of the Clyde steamer, Algonquin, bound for New York, were 145 barrels of honey.

It was on this steamer that in 1895 I had been twice a pasenger between Jacksonville and New York. At that time the Algonquin was the finest ship of the Clyde Line, and she is still a magnificent boat with well ventilated cabins, roomy state rooms and accommodations that are in every way superior. I lost no time in getting on board and visiting a scene of twenty years ago. None of the crew that had been employed on the ship at that time were there, but I had a pleasant visit with one of the officers.

Another two nights and a day of unpleasantness on the Cuban ship and we landed at Santiago, Cuba. Although it was mid-winter the weather was hot. As Spanish-American cities are usually built it seems that they try to make everything as hot and unpleasant as possible. The streets are narrow and the houses close together. There are two small parks in the center of the city with no shade trees to speak of. There are several modern hotels, and the city is the eastern terminus of the Cuban Central Railroad.

I took the train for Havana. A few words as to the railway and its equipment. The tracks are standard guage and there were at least ten full size passenger cars on the train. Got a second class ticket, which costs three cents a mile. First class fare costs six cents a mile.

The second class cars were not over-crowded and no pigs or chickens (about which more will later be said) were allowed as hand baggage. The accommodation was fairly comfortable except for the fact that there were no cuspidors and, it seems, no rules against expectorating.



PELLETT HIVE-CART WITH DERRICK RAISED TO LIFT FULL SUPERS OF HONEY FROM THE HIVES

For the tourist who wants to pay six cents a mile, the Cuban Central compares favorably with any first class road in the U. S. or elsewhere. There were two sleepers on the train, and meals and lunch counters at the more important stations. The train was on time and there was close connection with trains on the branch lines.

The run to Havana could have been made in twenty-five hours but wanting to see what there is to see and travel the entire distance by daylight I stopped over night at Ciego de Avila.

After crossing the divide which is only a few miles from Santiago, and getting on the northern slope, the temperature is several degrees cooler. The first fifty miles of the route was through settled country which was white with aguinaldo, the famous honey flower of Cuba.

What a treat it would have been to have stopped off for a visit with Mr. D. W. Millar who is located at Holguin, in Santiago Province, but it would have been necessary to take a different route and to make a side trip from the main line. Brother Millar has written several interesting articles for the Journal and a good writer is usually a good entertainer.

For about two thirds of the distance from Santiago to Havana the country is dense virgin forest, much like San Domingo, although more land has been cleared and is in cultivation. The land is level or slightly rolling and sometimes mountains may be seen in the distance. After passing Santa Clara, and from there to beyond Pinar del Rio the country is much more open der cultivation

The dense forest growth would be much more of a bee keeper's paradise if there was plenty of aguinaldo as there is on land that has been under cultixation.

It looks queer that the eastern part of the island where the soil is better than in the western portion, should be more thinly settled, but the land is probably held in big tracts by owners who refuse to sell, which is usually the case in Spanish countries.

I arrived in Havana a little after dark, and as the reader has probably heard lots about that city which has been so extensively advertised I will say nothing except that I never did and never would like that place. I must wait ten days for a steamer to Nassau, and did not feel like spending that much time in Havana.

So I took the train for Candelaria, fifty miles to the west and near where I had lived in 1902 and 1903.

People who visit the old home after an absence of several years are usually disappointed. In this case there was the usual disappointment as not many of the old timers were left. Most of them had returned to the States, and several had crossed the Great Divide.

But there was an agreeable surprise in meeting four of the old friends. They were: Mrs. Unruh, Mr. Moe, Mr. Muhl, and Mr. Somerford.

Mrs. Unruh had bought a farm of thirty-three acres at least a half mile from town, but during the twelve years that she has owned the place the town has grown to such an extent that the property now adjoins the city limits and she has a good speculation.

A VILLAGE SCENE IN BAHAMA

Mr. Muhl is still in the bee business. He is located on the south coast in a south-east direction from town, where the country is white with aguinaldo.

Mr. Somerford is also located near the south coast, in a south-west direction from Candelaria, and is in a good aguinaldo district.

Mr. Moe still has his apiaries a short distance in the country, but is residing in Havana where he is engaged in the fruit business.

Although Candelaria is a fair sized town claiming at least 3,000 population there is no hotel that is worthy of the name. I was taken care of by Mrs. Unruh and her sister Mrs. Travis, and never expect again to have such a pleasant visit

Six miles to the west of Candelaria is San Cristobal, and six miles further is Taco-Taco. It was between these two places that I was located. Mr. Webster is now living on the old place and is growing fruit, with bees on the side. He has a nice home and everything neat and in good order. The shady front yard that is planted in Bermuda grass and kept clean with rake and lawn mower would be an example for many home lovers to follow. The little frame shack that I had built was still there and had been through two cyclones.

It was at Taco-Taco that the late John H. Martin better known as "Rambler" took his last stand and made good, after several years of failure in California. It was early in the spring of 1902 that Mr. M. arrived in Cuba and built up a big apiary, and got a good crop of honey. For a year he wrote interesting articles for each number of Gleanings in Bee Culture. In May 1903 he died, it was said from over work.

That visit to the old home was an experience not soon to be forgotten. The honey season was on and for the first time in twelve years I had enough to eat of the delicious aguinaldo honey.

Time goes by at aeroplane speed and it was nearly time to take the ship to Nassau. Coming out from Havana on a second class ticket (98% of the people travel that way) most of the passengers were neat appearing, but what a difference going back! the train was crowded with what appeared to be farm laborers and standing room was at a premium. Nearly every passenger had from one to three live chickens, and there were several pigs and dogs in the car.

This road which runs from Havana to beyond Pinar del Rio is known as the Western Railway of Havana, and is under English ownership and management. First class passengers are allowed to carry as hand baggage, one live chicken, and in the second cars three chickens or one pig may be taken. If live stock is carried in the baggage car, excess charges have to be paid. Two and a half hours of misery and the train pulls into Havana.

Twenty-four hours aboard of the floating palace "Mexico" of the Ward Line and I landed at Nassau, capital, main sea port and commercial metropolis of the Bahama Islands.

It has always looked a little curious that so little is known and said of the Bahamas as near as they are to Florida, Cuba and San Domingo. Some of the smaller islands are not over 50 miles from Florida, and the capital is not over 200 miles from Miami. We hear more about Guam and St. Helena which are small and insignificant islands and are thousands of miles from nowhere.

The Bahama Group consists of 29 islands and 661 keys or smaller islets. They extend between latitude 21 and 27, and longitude 71 and 79. The area of the group is 6,000 square miles and population 55 to 60 thousand. If the population is 60,000 that means a density of ten to the square mile. Something different from Porto Rico with 3,500 square miles and 1,300,000 population

The Bahamas are owned by Great Britain and are governed pretty much the same as other English colonies on this side of the Atlantic.

It is the popular impression that the islands are a lot of wind-swept rocks, out in the ocean, with sponge fishing and wrecking as the only industries

The wind and rocks are there and lots of both. There is a delightful climate except for the wind, and plenty of tropical vegetation although it does not grow as luxuriantly as in the West Indies.

The land is mostly soft rock and the little there is of soil is decayed vegetable mold. In many places close to the sea are strips of sand which is good land for cocoanuts. There is lots of swamp land in which grows the mangrove, a well known honey plant of Florida. Most of the land of New Providence, the island on which the capital is situated, is a pine barren, although there are considerable areas of hard wood near the sea shore.

The principal growth on the islands of Andros, Abaco and Great Bahama is pine trees and the islands further to the east are grown in hard woods. The cocoanuts grow as tall as in the West Indies. There is lots of aguinaldo, which is here called the Christmas flower. It grows as in Cuba on land that has been cultivated. On some of the abandoned sisal plantations are patches that are white with the bloom.

Oranges and grape fruit do well, that is if the hole in the rock in which to plant the tree has been blasted out with dynamite and dug deep enough. The soil, the little there is of it, is rich and does not require fertilizer.

There was a time when pineapple growing was a great industry, but it was killed by the U. S. tariff. Tomatoes are grown in immense quantities. It is nothing unusual for 10 to 20 thousand crates to go to New York on one steamer. And such luscious and juicy tomatoes! On the island of Elutheria they were to be had for the picking. What a paradise for the epicure who never before had enough ripe tomatoes.

There are no mountains and the

highest elevations above sea level seldom exceed 100 feet. The greatest attraction of all is the beautiful clear sea water; not only clear, but usually smooth and safe for small boats.

Sponging is the leading industry, and is a good business for the buyers and exporters who have been long established, but from the looks of a sponge-fishing boat and its crew it is not an occupation that would lead to easy street.

Lumbering has begun as an industry. On Abaco Island some 60 miles to the north of Nassau, is a big lumbering plant that is owned by American capital and is shipping out millions of feet of pine lumber, most of which goes to Cuba.

W. D. Campbell, of Lambeth, Ontario, and His Smoker Box

Although there are several lines of steamers that come out from England to Mexico, Central America and the West Indies, none of them touch at Nassau and all commerce with England is by way of New York.

Last and not least of Bahamas' attractions are the people. English is the only language spoken, and the representative people are as refined and intelligent as in any English-speaking community in the world. What is known in the States as the "tough element" exists only to a limited extent. The colored people are usually peaceable and honest. There is no "negro problem" to contend with as there is in the Southern States.

After the 12 years that I was "up against it" in Porto Rico, to get among people that I can look on as neighbors is somewhat of a relief.

There was an American, Mr. Miller, who was keeping bees on an extensive scale here, but returned to the States giving the excuse that the climate did not agree with his health. From official reports his honey crop for one year was 2,500 gallons. The apiary is now in charge of Mr. Vish, a brother-in-law of Miller, who with more experience will probably make a success of the business.

There is also a lady, Miss French, who for several years has been keeping bees in a small way, depending on them for a living. She is located in the suburbs of Nassau.

With 29 islands and 6,000 square miles of land, I hope that if I establish an apiary I won't run some one else out of business or get frozen out myself as I have been twice before.

Miami, Fla.

* * *

Apiary Devices

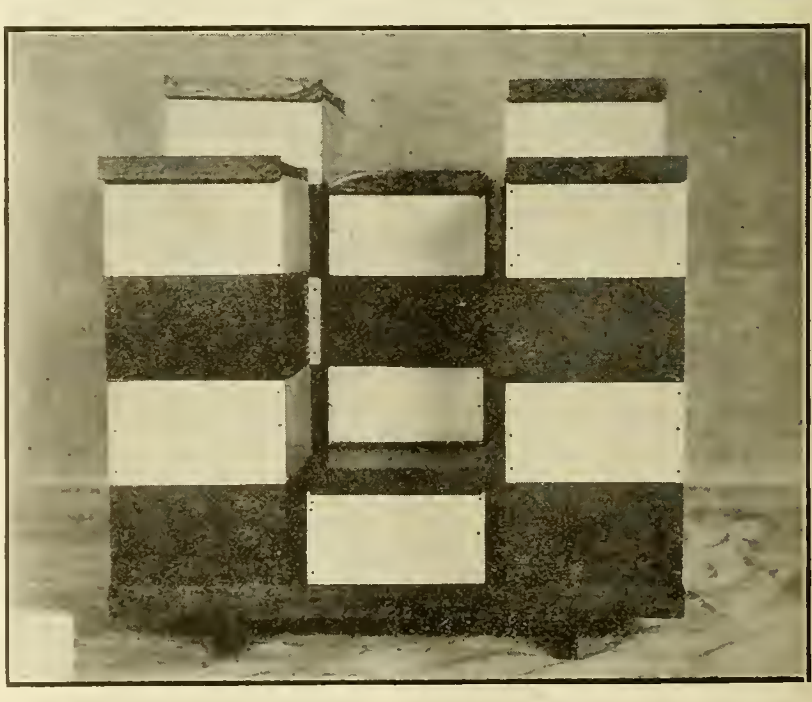
A Safe Place for the Smoker

It is not always convenient to remove the fire from the smoker when one wishes to lay it aside temporarily. However, more than one beekeeper has lost heavily from a fire set by a lighted smoker. It is convenient to have a lighted smoker within reach whenever one is at work about the apiary for so often it is desirable to take a look into a hive or two when there is little to be done. Then if the smoker is not protected mice will often gnaw holes in the bellows and ruin it. While there are numerous ways of providing for this implement, from using a large stone jar to turning a box over it outside the honey house, Mr. W. D. Campbell of Lambeth, Ontario, has as convenient a plan as any we have seen. The picture tells the story fully. Mr. Campbell has a metal box on top of a post at a covenient height in the apiary. It is always within easy reach, always safe and may be left burning with no danger, so in case one wishes to go back again for a few minutes it is not necessary to relight it. This plan is safe, convenient and inexpensive.

An Effective Super Cleaner

When our representative visited the G. A. Deadman apiary at Merlin, Ontario, recently he became much interested in the novel plan which Mr. Deadman has for cleaning supers. When the extracting is done, the usual way is to place the supers back on the hives to be cleaned or to pile them in the open and allow the bees to rob them out. This latter is bad for the bees as they become greatly excited and often injure the combs also. When placed on the hives in the usual way there is little benefit derived from the small amount of honey still present in the combs since it is divided among so many colonies that the extra gorging which the bees do about consumes the honey. Mr. Deadman gives the supers to be cleaned to a single colony and selects one which needs feed, or one with some unfinished sections. Instead of placing the wet extracting combs directly on top of the colony he has a platform which accommodates six piles but which has only one outside opening. On this position is placed the colony which is to do the cleaning. There is an opening from the bottom of this particular one to each of the five others so that the bees can reach the combs easily. while they are safe from robbers. Since the piles of supers are at the side of this hive instead of on top, the bees will remove the honey as rapidly as possible and the combs are very shortly cleaned up. If the colony is short of stores it soon makes the most of the available supply.

Mr. Deadman has used this means of finishing sections which are not quite ready for market. As will be seen from the picture the piles of supers can be made as high as desired so that any available number



DEADMAN'S SUPER CLEANER

can be cleaned. The hive containing the colony in the picture is only one story high, while there are twenty supers of wet combs piled up for them to clean.

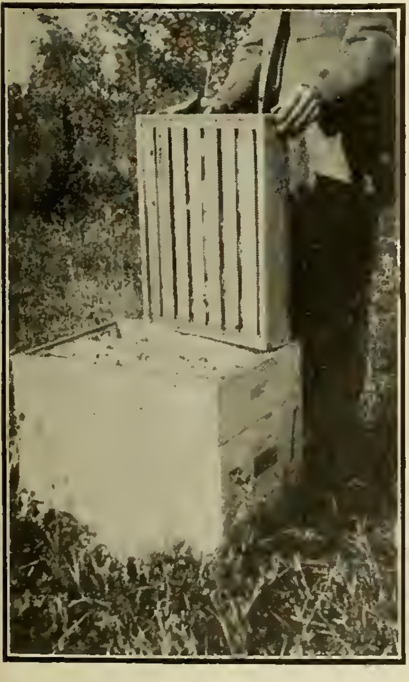
Hubbard Brothers' "Coaxer"

Every comb-honey producer has more or less trouble in getting the bees to enter the supers, and in some cases, bees will almost refuse to go above, preferring to swarm or to hang out and do nothing. The "Coaxer" as designed by Hubbard Brothers of Boyne Falls, Michigan, is as neat a device as we have seen for inducing a start in supers. It consists of a minature super three inches deep holding eight frames when used on a 10-frame hive. The accompanying cut shows the bottom view.

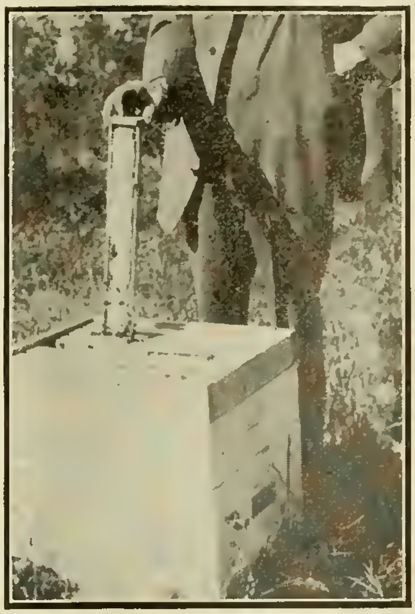
The "Coaxer" is placed immediately above the brood frames in the early spring, and is first filled with honey. It is then removed and the super slipped between it and the brood chamber. When it is used, the sections on the edge of the super are filled just as quickly as those in the center of the super, as it seems to attract the bees.

The side view of one of the frames, shows how shallow these frames are. If the Coaxers were a little deeper the bees would be tempted to rear brood in them, but the very fact that the frames are shallow and the cells deep keeps them clear of brood, even through the heaviest breeding season. Figure 3 shows a part of a super of sections which is being finished. These sections are placed in the center of the super, and the Coaxer put over them. If there is the least flow the sections are nicely finished.

Hubbard Brothers tell us that the first Coaxer made by them was whittled out of a pine board one day at an out apiary and was simply an emergency device. Besides being an excellent thing for coaxing the bees up into the super, this little device is also very good for spring feeding.



Bottom View of "Coaxer" Super



A Side View of One of the "Coaxer" Frames

When bees are put in the cellar for winter the "Coaxers" are all removed and stored in the honey house. Each Coaxer contains about twelve pounds of honey which is just about what a colony needs between fruit bloom and clover or raspberry flow.

* * *

The Sectional Hive

BY W. F. GEDDES.

[Continued from September.]

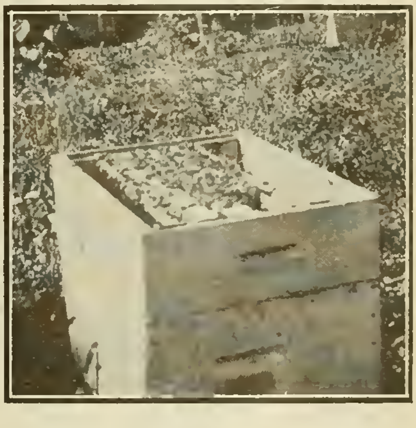
BEEKEEPING with sectional hives produces better combs. In the transposing of the sections in the shallow hive, the combs are generally built out better and more uniformly attached to the wood than in the standard Langstroth. Figure 7 will illustrate this point.

It is seen that the bees have built their comb to within half an inch of the bottom-bar of the Langstroth frame while the shallow frame is attached on all sides. Comb space is thus wasted and a hiding place is provided for the queen. Lack of attachment renders a new comb liable to fall out through handling and extracting.

Probably the greatest advantages of the sectional hive are those which apply to the production of comb honey; and these hives, in one form or another, are used very largely by comb-honey producers. Leo. E. Gately says: "Contraction of the brood-nest is a necessary essential to insure satisfactory work in the surpius boxes, and in this respect all brood-chambers consisting of a single tier of deep frames are enormously deficient. By removing one of the sections in a horizontally divisible brood-chamber the shallowness of the remaining division immediately throws the whole working force of bees into the surplus receptacle." There is no need of "baits" because the bees have formed the habit of going into the upper story to work.

Beekeepers using the divisible hive claim that there need be no "left overs" because all partially filled sections may be converted into good salable ones by "feeding back" extracted honey. It is true that this feeding back process can be performed on a deep-frame hive, but the bees will deposit so much of the honey in the brood-nest that the practice may be unprofitable. The objection raised by other comb-honey producers that the sectional hive produced too many sections containing pollen is a valid one, but it is largely overcome by using a queen excluder and no baits, or by having a comb containing some pollen placed on one side of the brood-nest. The theory explaining the latter method is that the presence of this pollen below will induce the storage of more pollen at the same place, keeping the sections clear and and for the storage of honey only.

Some beekeepers hold that the sectional hive is almost indispensable for migratory beekeeping, as it is certainly a trying experience to transport bees over the average country road. The large hives are cumbersome to handle, and there is always a fear lingering in one's mind that the big combs will break down *en route*, even when well wired.



Sections Being Finished in Center of Super Under a "Coaxer"

The sectional hive may also be of particular advantage in the control of swarming. In this hive swarming is controlled by simply adding to the brood-chamber from above or below as the circumstances warrant. The presence of a large unfilled space so near the brood-chamber seems to effectually check the swarming impulse. W. K. Morrison in his booklet on the "Divisible Brood-Chamber Hive," states "the fundamental point in preventing swarms is to convince the bees that their brood-nest is incomplete. Just as soon as the brood-nest seems full (to them) they make preparations for swarming. If the brood-nest is complete the beekeeper makes it incomplete, and again checks the swarming fever." However, many other factors which enter into swarm control such as the age and strain of the queen, the question of hive ventilation, etc, must be considered.

The adaptability of the sectional hive for wintering is a much debated point. Many claim that this hive has proven to be poor for wintering while others strenuously insist that it is the best wintering hive ever devised. Defenders of the divisible hive claim that when one brood chamber is put on top of another, the bees can form a perfect sphere when clustering; and the space between the upper and lower set of frames makes a passage through which the cluster can move and hence be within easy reach of stores without going clear around the combs. This principle is given support by Doolittle and Danzenbaker when they advocate an opening through deep combs for winter passage.

In extracted honey production the sectional hive beekeeper finds it possible to remove all finished honey earlier than it can be removed with deep combs, as it takes longer to cap or ripen the deep ones entirely. This feature shows a particular advantage when the honey flow slackens up suddenly, as it reduces the amount of ripe honey on the hive. Of course, using shallow supers would accomplish the same purpose on the regular standard depth brood-chamber, but special super accommodation would have to be provided. The narrow combs of the sectional hive may be uncapped with one stroke of the knife. The same is true, however, of the regular Langstroth frames, where they are properly bulged and a long knife is used. However, the firm attachment of the combs in the shallow frames permits less careful handling than is required with deeper frames. Many sectional hive beekeepers state that there is no need of wiring the frames and that thinner foundation can be used. Nevertheless, it is a common practice in Ontario to wire the shallow frames even more carefully than the standard size frames because of the thinness of the top-bar.

The difficulty of finding the queen in a divisible hive may be objected to, but the queen need only be seen once in the season, generally in the spring, to note her age and see if she is clipped. The general condition of the colony will tell the experienced beekeeper how the queen is doing. An easy method of finding the queen, which is very effective, is to take a bottom board, tack a piece of cloth or canvas on same and paint the canvas with crude carbolic acid. Substitute this bottom-board for the bottom-board of the hive in question and place a queen excluder over the brood-chamber. In about 30 seconds the queen will be found on the underside of the queen excluder, having been driven up by the carbolic fumes.

The aim of the divisible hive advocate is to cut every unnecessary manipulation, and it should not be necessary to handle frames if the proper system of management is followed. In a locality where foulbrood exists the divisible brood-chamber proposition is not one that will permit economical handling of all its frames.

The cost of the divsible hive owing to the accuracy neccessary in the construction of its various parts is an objection often put forward against its use. Especially in those types where closed end frames are used the workmanship needs to be much more exact than that required by other hives. It is due to lack of care in this respect that some beekeepers have been troubled with bur-combs. With ordinary care hives last a life time, and the extra trouble and expense involved at the outset may be amply repaid by the other advantages.

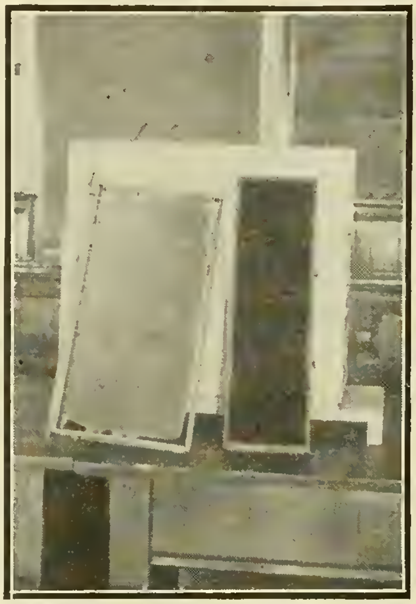


Fig 7.—Comparative Sizes of Langstroth and Heddon Frames

The reader will see for himself that the value of the sectional hive depends, firstly, upon the man who is going to handle it and, secondly, upon the district in which he is going to keep his bees. No hive can claim perfection, and what is suitable for one set of conditions is very often unsuitable for another. In every case it is essential to know the system of mangement which is the most practicable in the individual case and then choose the hive which is adapted to the system.

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Distance Bees Fly

BY C. F. BUCHER.

THE writer has read, with interest the editorial on page 49 of the American Bee Journal, "Distance Bees Will Fly," also Mr. Baldwin's article in Gleanings in Bee Culture, and Editor Root's remarks on the subject, as well as the opinions of other noted writers. The distance at which bees can profitably work probably depends largely upon conditions and locality. In this locality when weather conditions are favorable the bee goes out on a hunt, and when she finds a rich spot she somehow acquaints the others in the hive with the fact.

The senses of sight and smell are no doubt very acute in the bee. Who has not seen them nose from flower to flower without alighting because at the time there was no nectar present?

If in the spring when the weather is warm enough for bees to fly but not so warm that they will naturally fly a long distance from the hive, you start feeding them, say 50 yards more or less from the hive, either diluted honey or sugar syrup, then set the same kind of feed 100 yards farther away, the bees may not find it for days, but if you carry some bees while they are filling up, whether it be 100 yards or 1000 yards away just so you get one or two bees there, they will note the place, go home and report, though some writers say bees are entirely void of intelligence. In a very short time there will be a crowd of bees where the feed is, neither sight nor scent has taken them there, but some one of the family has found it and told them.

My bees are located near the center, on the south side of a strip of timber nearly three miles long, standing on both banks of a stream. For about two weeks in August, 1914, in the forenoons the bees worked rapidly; they would rush out of the hive, circle upward in a northeasterly direction directly over tall oak trees, and if they continued in a straight course they flew over forest trees for a mile or more. At that time there was little for bees to find except about 2½ miles away, exactly in the direction the bees were flying, there were two patches of buckwheat in bloom; there were many bees working on the buckwheat. I have no proof they were my bees, but circumstances point strongly that way, the bees could not possibly have seen those fields without going many hundreds of feet up in the air; and as for smelling back of more than a mile of timber land, with the wind almost never from the northeast at that season, it seems to me very doubtful.

Littlestown, Pa.

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Wintering in the Barn Loft

BY O. H. L. WERNICKE.

MY colonies are in two story 8-frame Langstroth hives with ¾-inch full width openings; by inserting a ¾-inch frame between the bottom-board and hive-body, a space 1½ inches high was provided between the frames.

My city apiary is in the loft of a wooden barn unheated. The hives are placed on benches, 20 inches above the floor, close to and facing the walls. There are 4x16 inch openings through the walls of the barn in front of the hives, and each opening is provided with a generous alighting board. During the coldest weather these openings are partially closed.

In packing I replace the hive covers with a hive-body, having a queen excluder tacked on the bottom, and tightly stuffed with dry grass; this insures against dampness and makes a warm cover. In addition, the four sides of my hives are covered with five thicknesses of corrugated straw board, pasted together with silicate. This makes a slab about one inch thick, and I cut them into two sizes, one to fit the ends of the hives. The end pieces are somewhat wider than the hive itself so as to lap the side pieces; all are made high enough to reach from the stand or bench to midway of the extra grass-filled body, to prevent drafts. These straw-board slabs are held in place by strong cords, three to each hive, top, bottom and center.

My method of fastening is to form a loop in one end of the cord, so it can be pulled up good and tight; the loose end is then "tucked under;" two half turns are sufficient By avoiding knots the cords may be quickly removed by simply pulling on the loose end. The slabs and cord made to order cost 20 cents per set and will last many years.

During the month of January the hives were turned end for end and dead bees removed from bottom boards by means of suitable wire hook, after which the hives were again turned right end to.

I have found this method of packing very satisfactory indeed. My hive-bodies being 8-frame size are light, have no projecting cleats or hand holds; this permits a snug fit for the straw board slabs. I sometimes place a gunnysack or piece of old carpet over the top of the hive to arrest any tendency of circulation between hive-bodies and the slabs. Being indoors, no covers are required; in fact, my summer covers consist mainly of honey-board, held in place with a brick or block.

The past winter here, according to United States weather reports, was about the usual average for this part of Michigan, ordinary temperatures ranging from 5 to 25 degrees Fahr. above; then we had warmer spells and also cold snaps when mercury dropped below zero for days at a time. About the middle of April is the time when Michigan beekeepers bring their colonies from winter quarters to the summer stands. My method, of course, dispenses with all that, as I leave them in the barn loft the year around. The interesting facts are that all my colonies commenced brood-rearing about March 1, or earlier.

The early brood rearing and vigorous condition of my colonies generally seems to prove that the packing is adequate to conserve vitality and stores; it also affords opportunities for the much desired cleansing flights on numerous warm days, without attention.

Grand Rapids, Mich.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

A Woman Beekeeper in British Columbia

I have at last after four months writing to various bee people, gotten a hive up here. The hive and frames were home made. I have now gotten them into a 10-frame Langstroth Hive, having transferred the bees of the old combs into the new frames, and they have drawn out four frames of foundation.

They are Italian, but the queen and drones are very dark. Unless short of honey they are good tempered, and when they do sting, they are not half as bad as the mosquitoes and black flies.

I do not know what bees will be able to do up here, the northern end of Vancouver Island. As you probably know, it is all forest but this place used to be an old Indian ranch and there are a great many wild flowering shrubs, currants, gooseberries, salmon berry, wild crabs, plums, maples, etc. Fireweed is supposed to be the main honey crop plant where there is no clover.

I hatched a queen cell in my incubator last week just to see if it would work all right. I wonder that beekeepers who go in for queen rearing on a large scale do not use incubators. One can regulate the temperature and moisture perfectly with a good machine.

Mrs. Lillian E. Bland.

[Some years ago there was considerable done in the way of hatching young queens by artificial heat, but latterly little is said about it. Some believe artifical heat is just as good as the heat of the hives, while others think there is a special benefit from the actual contact of the bees surrounding the queen-cells. We make much use of the Miller nursery, in which queen-cells are put to await the emerging of the virgins, but prefer to have the cells in the nursery as short a time as possible. The nursery is kept in the upper story of a strong colony so the cells have the heat of the hive, but not the immediate contact of the bees. One special advantage of having virgins hatch out in an incubator or nursery is that one may thus discard any that have imperfect wings or other defects, whereas when a sealed cell is given to a nucleus one cannot be sure that the cell does not contain an imperfect virgin, and sometimes a dead larva.]

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Honey is a Wholesome Sweet

It is a matter for no small gratulation that so well written an article as follows should be published in a paper having the immense circulation of The Chicago Daily News from which paper it is copied.

Dry statistics tell us that every man, woman and child in the United States consumes, on an average, eighty-five pounds of sugar annually. Most health experts will agree, that while the body craves sugar, this is an excess amount of cane sugar, which should not be used in larger quantities than three or four ounces a day. A great deal of this cane sugar is taken into the system by means of commercial candy, many young women being known to consume one-half pound or more at one sitting.

Now all sugar, particularly cane sugar, has an affinity for lime. In practice this means that an excess of sugar is bad for the teeth since it breaks down the lime substance of which the teeth are made. In addition, while many commercial candies are above reproach in purity, there is still a great mass of adulterated candy manufactured and eaten by our children.

Is there no other form of sugar less harmful than cane sugar and equally attractive with candy? Yes, a sweet as old as biblical times, at least 3,000 years ago, and that is honey. Honey is the most simple and natural of sugars and can be absorbed readily into the blood. The very fact that it seems "sweeter" is thus a guidepost to taking too much. For children especially, honey or food in which honey is used are far preferable to artificial sweetmeats. Every growing child demands a quantity of sugar, but it has been proved that the child who at home receives foods in which enough sweet of the proper kind is given will not crave artificial sweets and candies.

There are many special recipes in which honey can be used. The famous cookies of countries oversea, the ginger bread and special honey desserts of various countries are fairly familiar. One called instantly to mind is the Turkish dessert, paklava, or a pastry served with nuts and honey. Another foreign confection is pounded nuts and honey worked to a paste, molded and cut into squares after the manner of our own "fudge."

But the housewife can use honey in still other ways than confections. Why not honey in the center of baked apples combined with raisins, or used with stewing fruits of various kinds? As honey has the power of absorbing moisture from the air, any cakes or bread baked with honey keeps better and more moist and less likely to dry out. Honey can also be used on various cereals or on bread especially the whole wheat and brown variety. Think of the splendid snack for a youngster that a generous slice of whole wheat bread and honey makes.

In preserving and canning, honey may also be used in place of various syrups. Its subtle flavor and healthfulness recommend it. As to expense, while it may seem that honey is dearer than sugar, less of it need be used, so that there is little ultimate difference in price, especially with sugar at the current market figure.

Many housekeepers do not know the right place in which to store honey, and unthinkingly put it in the cellar or a dark, cool place. On the contrary, honey should always be kept in a dry, warm place, even at 100 degrees. If kept in a damp place the "cappings" of the combs become watery and the honey oozes through, but if the comb is kept where the air is warm and dry it will remain in more perfect condition. Owing to the strictness of national food regulation there is practically no danger nowadays that honey is adulterated, and the housewife who finds a reputable, standard brand need have no fear.

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Keeping Frames of Honey

1. What is the proper way to keep frames of honey during the winter to be used in building up colonies in the spring? Can they be stored in empty hives and kept out of doors, or will freezing injure them?

2. Can frames containing unsealed honey be kept for this purpose?

3. Can unsealed honey in partly filled sections be kept through the winter to be used next season as baits? Miss R. Maine.

1. Such combs can be kept wherever comb-honey keeps well. Outdoors would not be the place for freezing would crack the combs and also be likely to make the honey granulate. In the cellar is a good place if sufficiently dry. Beside a furnace in the cellar is an excellent place. The combs will keep fairly well in any room where it seldom freezes, the ideal place being in a room with a somewhat steady temperature never below sixty, up to a hundred degrees doing no harm.

2. Yes; but if in a place at all damp the honey will absorb moisture and become watery more readily than will sealed honey. In a warm, dry place, unsealed honey will keep all right.

3. It is not advisable to try such a thing, for some of the unsealed honey or even the sealed honey, will be pretty sure to be candied, and when filled such sections would not be marketable.The thing to do with such sections is to have the bees clean them out this fall, leaving them perfectly dry. If there is enough honey in them they may be extracted before being given to the bees. It is difficult to get bees to clean out sections by putting them on the hives, so they must be set out in the open, and when this is done the bees are sure to gnaw the combs to pieces unless a large quantity is exposed at once. If you have only a few sections to be cleaned out, allow only a very small entrance to the pile of sections, so that only a single bee at a time can enter.

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Annual Field Day Meet and Joint Meeting of the Worcester County Beekeepers' Association and Eastern Massachusetts Society of Beekeepers

This year at the invitation of the Worcester County Beekeepers' Association the Eastern Massachusetts Society met with the Worcester County Association at the home of Mr. W. E. Parker, West Boyleston, on Saturday, August 5th. From 11 o'clock till 5 the air hummed with the sound of bees—not the insects themselves, entirely, but with discussion and genial talk about them. The day was rather overcast, but pleasant and there was a good gathering. All enjoyed the kindly hospitality of the host. Dinner was served on the basket lunch plan, after which came the speaking.

The special guest of honor, Mr. C. P. Dadant, of Hamilton, Illinois, Editor of the American Bee Journal, spoke delightfully and instructively on Prevention of Swarming. He was followed by Mr. Arthur C. Miller, Providence, R. I.,—subject: "What to do Now"—Mr. Allen Latham, Norwich, Conn., and Dr. Burton N. Gates, Amherst, Mass.

Dr. Gates spoke particularly of the symptoms of bee paralysis which has appeared lately in different parts of the country. Later he demonstrated the proper method of opening a beehive, with much practical advice.

JOSEPHINE MORSE, *Sec.*
South Lancaster, Mass.

MISCELLANEOUS NEWS ITEMS

Western New York Honey Producers' Association Meeting

The basket picnic and field meeting of the Western New York Honey Producers' Association which was held at the home and apiary of Mr. Roy Wisterman, at Dysingers Corners, N. Y., was a decided success. Mr. Wisterman does not claim to be a professional beekeeper although he finds it a profitable addition to his extensive farming operations. He says he does not known very much, but the doubtful only have to look at some of the fine queens which he reared by the grafting process to know that he is no backlotter at the beekeeping industry. Lunch was served on the spacious lawn by the wives of the beekeepers. Mr. J. Roy Lincoln, of Niagara Falls spoke on the management of bees in an outyard with the minimum of labor. Shortly before fruit bloom he unpacks his bees and clips his queens also giving a super which is in reality another body. Shortly after fruit bloom he places a frame of brood from the lower story in this super, and leaves them alone until clover starts when he takes one frame of brood and two frames containing the most honey and places them in another body the brood in center and the honey on outside filling with empty combs or foundation. This body is now placed on the bottom board with an excluder over it and the bees are brushed off the combs. The queen is placed in the lower story with the one frame of brood, and the remaining brood is placed over the excluder to hatch out and combs are then storing combs. Ten days later any queen cells that may have been started are removed.

Mr. William Vollmer of Akron, N. Y., told of his varied experience in buying bees in combless packages from the south, having bought both one and two pound packages. He says that with the one pound package with queen it is advisable to give them empty combs with a frame of brood if they are received early in May, in order to make them a remunerative proposition. With the two pound package it is also advisable to give a frame of brood but the combs are not quite so essential. With the two pound package one is generally sure to get sufficient honey the first season to pay.

Mr. John DeMuth, of Pembroke, N. Y. told of his exeprience with Europe-
Y. told of his experience with European foulbrood. A good strain of in check but some strains are almost

GROUP AT THE WESTERN NEW YORK HONEY PRODUCERS' MEETING as susceptible as blacks. Caging queens for a period of time sometimes effects a cure but killing old queens and giving young vigorous ones is another method. Foulbrood seems to grow less rampant after being in a locality two or three years and gradually wears itself down. Mr. DeMuth has visited a large number of beekeepers in the western end of the state and they all report a small amount of European foul brood. The most of them treat it by one of the foregoing methods and consider it the same as weed in your garden; eradicate it this year and you may or may not have any next year. With a little help it can be held in check so as not to be as serious as might be otherwise expected.

Michigan Beekeepers to Eat Thanksgiving Dinner in Lansing

On November 30, December 1, and 2, Michigan beekeepers will gather at Lansing for the fifty-first meeting of the State association.

The opening day coming on Thanksgiving will enable beemen to renew acquaintance with one another over the festive board, and will be an auspicious day on which to unite and discuss the summer's work, and make plans for a more successful season in nineteen seventeen. The holiday will also enable beekeepers to bring their wives along, so that we expect this meeting will be largely a family affair. Many ladies have already intimated that they would be present to help swell the attendance and enjoy a good time.

We are preparing an interesting and a profitable program, which will be published in the November issue, and we can assure all those planning to attend, that we are going to have the best meetings that the Michigan Beekeepers Association has ever had.

There are many beekeepers who do not yet fully realize the value of these conventions. A beekeepers' convention is an investment for the beekeeper, and it remains with him to secure as many shares as possible, because every share should, and in many cases does, return a fine profit the next season.

Many of our most successful beekeepers will be in attendance, beemen who count their crops in tons rather than in pounds, and a few minutes conversation with these men will be worth all the expense and trouble of coming to the meeting. If you are looking forward to making beekeeping a profitable part of your work in the future, by all means take in these meetings in Lansing.

We do not want the beekeepers to forget the exhibit side of the convention. We shall have plenty of room to display honey and other exhibits, and as we are planning to give diplomas and medals to be won outright, besides the challenge medals, we are expecting a nice showing of honey that will add to the general interest of the convention.

We hope to include other features which will tend to enliven the proceedings and with the banquet which Messrs Root & Hunt are providing all beekeepers present, we should easily have a convention that will rank among the largest and most enjoyable ever staged by a State Association. We will do our part and hope and expect you to join with us in making this coming meeting a hummer. Eat your Thanksgiving dinner in Lansing.

F. Eric Millen, Secretary-Treasurer Michigan Beekeepers' Association.

J. ROY LINCOLN'S APIARY OUTSIDE OF NIAGARA FALLS

APIARY OF WM. VOLLMER, OF AKRON, N. Y.

What About Mexico?

El Agricultor Mexicano, a farm paper published in Spanish at San Antonio, Texas, had in one of its recent issues a nice article on beekeeping in Mexico. From what we have learned in the past, there is an unlimited field for the development of beekeeping in this country, and we hope that the time is fast coming when conditions will be settled so that beekeeping may be developed there at least to the extent that it may relieve a portion of the suffering in that strife-ridden country.

Illinois-Wisconsin Meeting

The annual meeting of the Northern Illinois and Southern Wisconsin Bee Keepers' Association, will be held in the supervisors room in the Court House in Rockford, Illinois, on Tuesday, Oct. 17, 1916. All are cordially invited to attend.

B. Kennedy, Sec'y, 2507 W. St. Rockford, Illinois.

Bees Have a Color Sense

The following, a part of an article written in a late issue of the St. Paul News, is copied, not so much from the fact that we are offering our subscribers something new, but to illustrate that the general public is being educated as to the value of bees, and are also getting an insight into beekeeping in general.

"The bee confuses red with black and blue-green with gray. It distinguishes only "warm" from "cold" colors and confuses orange red with yellow and green blue with violet and purple-red. Thus its sense of color is comparable to that of a man who is red-green color-blind.

"Such colors which are not distinguished as colors by the eye of the bee, that is, blue-green and pure red occur very exceptionally in flowers. Here is support for the view that flowers have developed their colors as an adaption to their requirement of fertilization.

"In many blossoms contrasting colors are combined, and these are interpreted as inviting the visits of insects, especially where they form "sap-colors." Scientific investigations of the color-sense of the bee prove that differences in colors recognized by human eyes are also perceptible to this insect. In vari colored blossoms scientists find almost exclusively that those colors are combined which are differentiated by the eye of the bee."

Ontario Crop Report and Prices

The Ontario Beekeeper's Association, under date of August 11, published a report of the crop in Ontario for 1916. The total of honey produced is 2,127,903 lbs. or an average of a trifle under 90 pounds per colony, as contrasted with a 59 pound average in 1915. In spite of the large crop this honey seems to be selling at such a rapid rate that the Ontario beekeepers will get as much as last year for their honey. In fact the prices as recommended by the committee are almost identical with those of last year. They are as follows:

No. 1, Light Extracted, wholesale, 10c to 11½c per lb.

No. 1, Light Extracted, retail, 12½ to 15c per lb.

No. 1, Comb wholesale, $2.00 to $2.75 per dozen.

No. 2. Comb wholesale, $1.50 to $2.00 per dozen.

These prices are f. o. b. in 60 lb., 10 lb. and 5 lb. tins, the former being net weight with the tin thrown in, the two latter being gross weight.

Old Bee Journals

Can you give me the names of old Bee Journals in America with dates of existence? A Subscriber.

When I gave the names of the oldest bee magazines, I had no idea of giving a list of them all. In the first number of Gleanings, published January 1873, there is a mention of the then existing bee periodicals of America, all of which are defunct, except the American Bee Journal and Gleanings. This list included the Beekeepers' Journal, established in 1869, the North American Bee Journal, the National Bee Journal, the Annals of Bee Culture and the American Bee Journal.

Moon's Bee World, the Beekeeper's Magazine, the American Bee Keeper, the Canadian Bee Journal, the Southland Queen, the Pacific States Bee Journal, the Rocky Mountain Bee Journal, the Western Bee Journal, the Rural Bee Keeper and the Progressive Bee Keeper have all appeared and disappeared, most of them after several years of existence. I have made the mistake of destroying a number of these old files, because they were so numerous, but am sorry of it now. There were others, of which only one or two numbers appeared but I have no longer any trace of them.

Among the foreign ones L'Apicoltore, of Milan, Italy, 1868, is still published and I have every number of it, for it was sent to my father first and to myself afterwards, as honorary members of the Italian Association. I feel quite proud of this. C. P. D.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Ventilation

1. What is the proper space to allow between the bottom board and the hive in this climate? It is an extremely variable climate. We have had three weeks with the temperature as high as 98 degrees in the shade, but today it is not over 75 degrees. What would be a safe space to leave for the summer, and how would you ventilate on one of these very hot days when the bees hang out in clusters?

2. Does it bother the bees and get them discontented opening and closing the entrance space to meet the extremes of temperature; that is, opening it in the morning and closing it at night, or is it not advisable to do that? This is my first season, and I do not know much about ventilation.
ONTARIO.

ANSWERS.—1. The space between bottom-bars and floor is not a matter of climate. In summer it should be the deepest you can have without the bees building comb in it, and that is probably ¾ inch or a little more. I use a depth of 2 inches, and then prevent building down by putting in a bottom-rack, and explained in "Fifty Years Among the Bees." In hot weather, and that's most of the summer, I also give ventilation by shoving the super forward on the hive so as to make a space of ¼ inch or more at the back end.

2. It will not trouble the bees, but is a good deal of work for the beekeeper.

Miscellaneous Questions

I am thinking of running for extracted honey next year, as I have not much time to spend with my bees.

1. As soon as I add extra stories my queens will enter them and deposit eggs in the extracting combs. Will I be able to secure a a first-class grade of white clover comb honey from combs where brood has been reared?

2. Will I have to use queen-excluders if I want to get white honey?

3. Is there as much money in extracted honey at 7 cents per pound as in comb honey at 17 cents?

4. If you were going to begin again which would you produce?

5 What hive would you choose?

6. Single or double walled?

7. Eight or ten frame?

8. If I start colonies with two frames of brood and add bees about June 15 next year, will they build up to strong colonies by fall, provided they are supplied with full sheets of foundation as needed?

9 If pure Italian queens are mismated will their drones be pure?

10. Has the German or black bee any yellow markings?

11. How many pounds of comb honey ought an average colony produce this year?

12. How is candy for queen-cages made?
ILLINOIS.

ANSWERS—1. Yes, after the brood has hatched out, but not while brood is still in in them.

2, Nearly all think an excluder a necessity in working for extracted honey, although some say they can keep the queen down without an excluder by keeping full combs immediately over the brood-chamber.

3. Not as a rule.

4. I think I would lean toward extracted.

5. Likely the dovetailed, largely because the most commonly in use.

6 Single.

7. Ten.

8. Yes, provided the season is good where there is fair pasturage.

9 Yes.

10. No.

11. At a rough guess, all the way from nothing to 200, according to place, bees and management.

12. Take liquid honey, preferably warm or hot, and knead into it all the pulverized sugar you can, making a stiff dough. Let it stand a day or more, then knead into it again all the sugar you can.

Clipped Queens and Swarming

In the July 28 issue of the Country Gentleman the party who wrote the article on beekeeping makes the statement that he gets to his bees only occasionally, and that by having his queen's wings clipped he can easily ascertain which hives have made attempts to swarm in his absence. Will you please tell an amateur how he can tell this with any degree of certainty MISSOURI.

ANSWER—You can tell something about it by looking in the hives. The queens' wings being clipped, if a colony swarms the swarm is likely to return to the hive, although in some cases it may go to the wrong hive. If you find sealed cells in a hive during the swarming season, it is a safe guess that the colony has swarmed or that it will swarm within a day or two, and there's no way to tell which of the two guesses is right. If you find unsealed queen-cells, or even eggs in queen-cells, you may know that swarming is contemplated, and that a swarm is likely to issue with the sealing of the first queen-cell.

Best All-Purpose Bee—Introducing Queens

1. Will an entrance guard that is too small for queens and drones to enter keep bees from mixing?

2. What is the best bee-pasture?

3. What is the best all-purpose bee?

4. Is it a good way to build up an apiary by buying tested queens and introducing them to colonies?

5. How do you introduce queens to colonies of bees?

6. What is the best kind of hive for comb honey? MISSOURI.

ANSWERS—1. No.

2. In some places one thing, in other places another. In your State white clover is likely the best.

3. Most beekeepers prefer Italians.

4. Yes, and it's also a good way to buy untested queens and buy a larger number.

5. One of the ways most commonly in use

is to introduce by means of an introducing-cage provisioned with candy, the bees eating out the candy and thus allowing the queen to get out of the cage.

6. The one probably most favored among beekeepers is the 10-frame dovetailed.

Requeening—Kind of Super—Rendering Wax, Etc

1. When is the best time to requeen, in the spring or autumn?

2. I only want to keep three or four colonies of bees for family honey. Would you advise comb or extracted honey?

3. What do you think of "chunk honey" production, and what hive is best for it?

4. For extracting, which is best the deep or shallow super and frames?

5. I have been thinking of using the shallow super 5⅝ inches deep so I could produce comb, extracted, or chunk honey as I may choose. What do you think of this plan?

6. I have one colony which is mixed, some bees show three dull yellow stripes, some bright yellow stripes and some all black. If I requeen with a pure Italian queen will they make a good colony?

7. What is the matter when the bees on the alighting-board chase each other around in a circle? No excitement in the hive nor signs of robbing.

8. Do you think I can make my hive-bodies and supers cheaper than I can buy them?

9. How can I render wax so it will be clear and free from dirt and trash without an extractor?

10. I caught a swarm in a decoy box, and as I was taking it down out of the tree it fell to the ground, breaking the combs and killing the queen and many bees. When I opened it up to transfer them the remaining bees acted crazy; they would go into the air, then cluster, then go into the air like they were crazy, and finally left. Do you suppose they missed their queen, and where do you suppose they went?

11. How do you like a deep cover with 2-inch air space above the sections, the cover covered with asbestos roofing? IOWA.

ANSWERS.—1. In the fall, near the close of the harvest or a little after. Yet on account of the time gained, it often happens that it is better not to wait so late.

2. Hard to say; probably extracted.

3. I hardly think you would like it for your purpose. In Texas it is popular. Any hive will do for it.

4. Shallow; except that it is convenient to be able to use the same combs in brood-chamber and super.

5. All right; only if you want to produce sections, better use the popular 4¼x4¼x1⅞.

6. Sure.

7. I don't know; I think it is a sort of play.

9. The chances are nine out of ten that it will cost less to buy them factory-made, and ten out of ten that they will be more satisfactory.

9. The secret of having it clear is to let it stand hot a good while; in other words, be a good while in cooling. If there's only a small quantity of it, have a good deal of hot water with it, so it will not cool so quickly.

10. Yes they missed their queen, and likely went back to the old home from which they swarmed.

11. All right, provided no bee can get into that 2-inch air-space.

Queens Disappearing

In June I hived a small swarm of bees, the queen looked as if she had been mated with a black or hybrid drone, so I gave them some brood from an Italian queen. In two or three days I examined the hive and the queen had begun to lay eggs, and was depositing two and three eggs in the same cell. In a day or so I looked again and she was gone. I gave them a frame of brood from another hive different from the first and they began to rear a queen. In due time she hatched out and was a nice Italian queen. She had destroyed all except one, and the bees had a strong guard over her. When I examined the hive again she was gone, and the next day she had not returned. The next day another queen hatched; she was of a darker color, but she soon disappeared. The hive was painted blue, and set at the end of the row. The rest of the hives were not painted so she had a good chance of finding her hive. Did she get lost or were the bees hostile? TEXAS.

ANSWER.—There is no way to tell just why the queen disappeared, though such disappearance is unpleasantly frequent. Sometimes the queen is lost on her wedding trip, sometimes the bees swarm out with her, and sometimes they ball her on her return.

Keeping Section Honey Over Winter—Queen Breeders

1. I have put six brood-bodies on to get frames of honey to feed with and to make increase next season How can I keep these without putting them in a warm room 45 to 70 degrees?

2. Also to keep section honey, will it not keep well in a dry room where it freezes? One with only 500 or 600 pounds cannot afford to keep a room to a certain temperature for such a small amount.

3. Who buys all the queens that are reared by so many queen rearers? For if one has good Italians and they requeen themselves, then why so many queen rearers? MISSOURI.

ANSWERS.—1. A good cellar will do. Indeed in a smoke-house, or almost anywhere, it will do well enough, only some of the honey may candy.

2. Freezing will make more cracks in the surface of the sections. That will not do for sections, although it may do no great harm to the combs previously mentioned I have known sections to keep well in a garret, but they had been in the garret during some of the hot weather, so as to get a good roasting.

3. Who buys all the cattle sold for breeding purposes, and all the settings of eggs? You say, "If one has good Italians and they requeen themselves," but the matter is not so simple as that. The great majority of beekeepers *don't* have have good Italians to begin with. The average beekeeper has bees with more or less black blood in them. He buys a pure Italian queen, and some of the queens he rears from her will be purely mated, but the most of them will not, for there are more dark than yellow drones in his apiary and in the surrounding apiaries. So he will have to keep getting fresh stock to work out the dark blood. Even if his bees are all Italian, if he is wide awake he will buy afresh now and then in the hope to get somothing better, just as it is with cattle and chickens. Then there are a few beekeepers having large apiaries who buy queens by the hundred to replace old queens, believing they can buy for less than they can rear young queens. The result of all this is that instead of decreasing the number of queens sold seems to be constantly on the increase.

Running for Comb Honey

How can I run for comb honey and at the same time prevent increase? I have read the plan written by G. W. Joice, in the July 15, 1915, issue of Gleanings, page 578, but I do not want to use the extracting super, as he advocates, if I can help it. ILLINOIS.

ANSWER.—The plan given by Mr. Joice is good, provided you want part of your honey in the extracted form. In my book, "Fifty Years Among the Bees," you will find given very fully the plans I have used to get along without extracting and without increase. One way is something like Mr. Joice's plan. Put all but one brood in a second story over an excluder, leaving the queen in the lower story with the brood at one side, and next to it two or three frames entirely empty, not even a starter or any kind in them. Before putting the brood in the second story, kill all queen-cells on them. In ten days again kill cells on these combs and return them to the lower story. Make what use you like of any combs built in the empty frames, but generally there will not be very much in them, and you can melt it up for wax. The combs that you restore to the lower story will have in them a good deal of honey, but the bees will empty it out and carry it up into the sections. Thus you have no increase, and all the honey goes into sections.

European Foulbrood

1. I had a battle with the European foulbrood four years ago, and last week I noticed several affected cells in three colonies. I sent a sample of brood to Washington, D. C., and they called it European foulbrood. I cannot understand why I cannot clean it from the entire apiary and keep it out. The whole apiary is headed with Moore's queens or some equal to them. I have tried most every method known, and in several cases it re-appears, but most cases are new ones. How can I rid my apiary of this pest? I have read your method in "Fifty Years Among the Bees," but you do not say that it has been thoroughly proven. It seems to be an easy way if it works.

2. Will bees ball a queen when freed after being caged for a week in the hive?

3. Is there any danger of spreading European foulbrood by using combs from supers of colonies affected by foulbrood on or in the brood-chamber of healthy colonies? KENTUCKY.

ANSWERS.—1. The two kinds of foulbrood have become so generally distribued that one or the other is likely to turn up almost anywhere. But there's no great occasion to be discouraged at the presence of European foulbrood. It is no worse to fight than weeds on a farm. Plenty of farmers raise good crops, and yet are never entirely free from weeds. Indeed, I wish I could as easily battle with weeds in a garden as with European foulbrood in an apiary.

I did not want to claim too much in "Fifty Years Among the Bees" for my treatment of European foulbrood, but I am very confident that no better treatment has yet been offered. Just cage the queen for 10 days, if the case is a mild one and the queen good, and in a severe case kill the queen and after ten days of queenlessness introduce a vigorous Italian queen, or else give a ripe cell at the same time the queen is killed. Even if you find only one bad cell, treat it at once You may not become entirely rid of it, but by thus treating it you will have less trouble with it than with weeds in your garden.

2. "Bees do nothing invariably," but in very rare cases would the bees harm a queen after so long a confinement in their hive, always provided there is nothing else in the hive that they in any way consider in the light of a queen.

3. With American foulbrood, yes; with European foulbrood there is very little danger, although I suppose there is always a possible danger.

Hunting Wild Bees

1. From whom could I get lessons or advice how to hunt wild bees, or through which department?

2. Would home-made hives be good for bees? Should the boards be planed from the outside? Should they be painted and what color?

3 Will plaster of paris or putty injure bees? PENNSYLVANIA.

ANSWERS.—1. I don't know. Not a very large proportion of beekeepers ever have done anything at hunting wild bees. Yet it is possible that there may be some one near your own home who is an expert in that line, and an advertisement might bring you the chance you desire.

2. Home-made hives are just as good for the bees as any other, but likely not to be so

good for the beekeeper as those made at a hive factory. When I began beekeeping there were no hive factories, and I got a cabinet maker to make some hives They were neatly made, but *had no entrance for the bees.* The cabinet-maker had overlooked that rather important part. Like enough you will find it cheaper to buy hives made in a factory rather than to make them yourself, or have them made near home. At any rate, get at least one hive as a model.

The outside of the hives should be planed, and it is generally thought they should be painted. White is a good color.

Amount of Sugar to Feed—Wintering, Etc.

1. Can you tell me how many pounds of sugar a strong colony needs for winter in a 10-frame hive; that is, when they have very little honey?

2 Some books say not to heat sugar syrup to the boiling point, as it kills the bees Do you think it does?

3. My bees have brood in the extracting super, what can be done about it? I would like to have it filled with honey, as the combs are all built.

4. Is it best to winter bees in a cellar here in Montana?

5. Is a cellar with ground over the top and sides all right to winter bees in?

6. What month do bees start to swarm in this section? MONTANA.

ANSWERS.—1. To be on the safe side, better not give less than about 30 pounds. That's for the weight of the dry sugar. But you must remember that sugar doesn't equal good honey if you want vigorous bees.

2. It is generally believed that burnt sugar is death to bees in winter, and I suppose that's right. But you can boil syrup without burning it. But what do you want to burn it for, or even boil it? The sugar has already been cooked all it needs, and if you dissolve it in cold water it will be just as well as to boil it. The only thing gained by boiling the water, or even warming it, is that it dissolves the sugar more quickly.

3. You can leave the brood there until the young bees emerge, and then the bees will fill with honey the cells as they are vacated. Unless, however, an excluder prevents the queen going up, she is likely to lay again in the same cells.

4. I don't know very much about Montana, but as it lies above the parallel of 45 degrees it must be pretty cold in winter, and I should suppose cellaring would best, but a man 100 miles north of me might winter much better outdoors than here, if he is in a very still place

5. Yes.

6. You ought to know about that better than I. At a guess I should say about the first week in June, and if I am wrong some one from Montana may be kind enough to correct me.

Fastening Foundation in Frames—Keeping Pollen Out of Extracted Honey

1. What is the very best method for fastening foundation on flat top bars in extracting frames?

2 Describe one good way by which the beginner can melt old combs into wax.

3 What should I do to make the bees build comb clear from the top to the bottom bar in the brood and extracting frames?

4 Describe the correct method of wiring brood-frames so that when the wire is imbedded in the foundation it will be perfectly straight.

5. Is there any way to prevent bees from putting pollen or bee bread in the extracting frames? If large extracted honey producers like the Dadants are troubled with pollen, how do they keep it from getting in the honey and spoiling its taste?

6. What is the best thing I can use to warm my wire imbedder or uncapping knife? MISSOURI.

ANSWERS.—1. Probably nothing better than melted wax poured along the joint.

2. I suppose you mean a beginner who has no wax-press. Here is a way given in "Fifty Years Among the Bees": "An old dripping pan (of course a new one would do) had one corner split open, and that made the extractor. The dripping-pan is put into the oven of a cook-stove with the split corner projecting out. The opposite corner, the one farthest in the oven, is slightly raised by having a pebble or something of the kind under it, so that the melted wax will run outward. A dish set under catches the dripping wax, making the outfit complete. Of course, the material to be melted is put into the pan."

3. There is probably no better plan than to use foundation-splints, and have the foundation entirely fill the frame, as described in "Fifty Years Among the Bees," page 80.

4. Use the spur embedder, doing the work in a room so warm that the foundation will be somewhat soft.

5. There is little trouble unless the brood-frames are shallower than the Langstroth (9⅛). The Dadants have a still deeper frame. Even if there should be some pollen in the extracting-combs, it will not generally be thrown out by the extractor.

6. A dish of hot water.

Keep Comb Honey in Dry Place

I took off some sections of comb honey July 31 and put them in the ordinary shipping-cases and stacked them in a moderately warm place On examining them a few days since, I found the honey oozing out of the combs.

1 What is the cause of this?

2. Does honey that is not good and ripe do this way? It was well sealed over and tastes all right yet I think it is mostly gathered from sunflowers, as that is the best honey flow we have here. It has been very warm and dry here for the last 25 days

3 Does honeydew fall this time of year?

4 What kind of honey does honeydew make? I notice it is not accepted in most grading rules as good honey.

5 If I have a lot of extra hive-bodies containing honey and pollen that the queen is not occupying at the close of the season, which is the better way to keep them over winter by placing them under or over the hive? If under, would it be a good idea to have an entrance between the two? MISSOURI.

ANSWERS.—1. When honey oozes through the cappings it is because the air in which they are is laden with moisture. That hardly seems to agree with your statement that it was very warm and dry. Still, as it was in a moderately warm place, it may have been in a place somewhat cooler than the air surrounding the place, in which case the incoming air would give up some of its moisture upon cooling. There might have been less trouble if the honey had not been closed in cases, but loosely stacked up, with fair ventilation.

2 Yes, the less it is ripened, the more danger. But as it was sealed, it would be expected to be ripened; and yet honey is sometimes sealed without being fully ripened.

3. Yes.

4 It varies very much, from very dark, disagreeable stuff to that which is palatable

5. I don't believe it makes a wonderful sight of difference, although they are usually placed over. If placed under, there would be less danger of having the entrance clogged if it were between the two stories.

Swarming—Feeding

1. Does extracted honey bring more than comb honey, and how much?

2. What can be done to make bees work in the sections?

3. Will bees swarm when the sections are on?

4. How many times does a colony swarm in a season?

5. What is the best feeder for winter use?

6 Would it pay to feed bees in the spring before the flowers bloom? VERMONT.

ANSWERS.—1. In a very few places extracted honey brings as good a price as comb honey, but in most places comb honey brings something like 50 percent more than extracted?

2. Give them a bait in the form of comb that has been previously drawn out?

3 Yes, indeed. How I wish they wouldn't.

4. Sometimes not at all; and from that all, the way from once to five or six times.

5. To feed in the fall for winter use, probably the Miller feeder is most generally used.

6 If the bees are short of stores it will pay big; if they have honey enough in the hive it will not pay at all.

Using Bisulfide of Carbon

How can I use bisulfide of carbon for the wax moth? How much does it take, and does it in any way injure the honey? VERMONT.

ANSWER.—At one time I fumigated a lot of brood-combs with bisulfide of carbon, or carbon disulfide, and I'll tell you just how I did it. I piled up the combs in hive-bodies four or five high. I made dough of flour and water, and upon the upper edge of each story I put dough, so as to make a close fit. Over all I put an empty hive-body, and in this put a saucer into which I poured nearly a saucerful of the liquid, and quickly put on the cover, of course having the cover a tight fit with the dough I left all closed two or three days. Larvæ and eggs of the wax-moth were all killed. I don't think it would injure comb honey, and I hardly think there is danger from too much.

REPORTS AND EXPERIENCES

Queens in Upper Story

DR. C. C. MILLER, Marengo, Ill.—

Dear Doctor:—In answer to one of your querists, you refer to the rearing of queens and their fertilization in the second stories, but that it was not yet a success. Now, here is a plan that has been a success with us this season (one swallow doesn't make a summer)

In the spring all colonies, as a rule, have single stories, and we put on a second story (without queen excluders) as needed We have an entrance in this second story, turning it to the rear of the first story, so the entrances will be in opposite directions. We leave the colony in this way until in need of more room, the queen will by this time probably have brood in different stages in the second story. Now find the queen so as to be sure where she is, put her in the first story, put on excluder (on first story) raise two story and put empty super between it and the first story, being sure the entrance is kept opposite to the first story entrance.

The empty super (of course filled with combs or foundation) should have no entrance in it. Now as room is needed, keep the story on top that has the entrance and brood in it. In about a month there will be laying queens and brood in the top story. If the story with brood is next to the excluder a lot of the queens hatched disappear, but if there is a super between and the entrances on opposite side, all seems well, at least that was the rule with us this season

We had 11 as fine swarms and queens this way as one could wish, practically no failures where above conditions existed, and the colonies were strong and had brood in the second story. These second story colonies were set off for increase.

Wapakoneta, Ohio. DR. O. H. GIBBS.

Season Not Good

The honey season here is over for clover. It was too wet and cloudy for a good harvest. Clover commenced to bloom about June 5 and ceased July 20. On account of so much rainy weather the bees could not gather the honey. Only about half of the sections that were built out are finished. Many sections are half and three-fourths full only, and considerable honey unsealed. We will, when fully ripe, extract all the unfinished sections and return them to the hives for the fall crop. H. H. FLICK.

Murrysville, Pa., July 26.

Many Swarms

I have been bothered with swarming this season. Formerly I have had good success with putting the brood up over an excluder, but this season it was no use, as all but one that I put up swarmed, and that one was queenless. Still, I cannot complain, as I got 600 pounds of white honey from 75 colonies, spring count, and increased 150.

Clarksburg, Ont., Aug 11. E. T. KNOLL.

Short Clover Crop

The clover harvest was good, but lasted only 15 days. My good colony on scales averaged 13½ pounds per day.

We had no nectar from basswood, and no rain worth while in seven weeks. Bees are *not* making a living now. No white clover in sight. EDWARD HASSINGER, JR.

Greenville, Wis., July 28.

A Good Crop

The honey crop has been fairly good throughout this locality. Bees have averaged about 60 to 80 pounds per colony. Spring count 12, increased to 33, and they have produced 600 pounds of fine fancy comb honey. My best colony produced 128 4x5 sections in six weeks of the white clover flow.

Edwardsvile, July 26. L. WERNER.

Fine Clover Crop

The early part of this season was fine, the finest crop of white clover that I ever saw. Then the dry weather came on and cut the clover short right in the height of the game.

I have taken from 65 colonies, spring count, about 4500 pounds of the very purest white clover honey that I have ever seen, and I have also increased to 120 colonies. We have had no rains in this place since the first of July, but we are having a good rain today, and we expect some fall honey.

Milo, Iowa, Aug. 14. B. A. MANLEY.

Two Valuable Old Books On Bees

American beekeepers welcome the reprinting of the original work of Langstroth. It was the first practical work on the honeybee ever written, and well deserves a place in the library of every one interested in this subject, whether veteran or tyro.

The writer, while in attendance at the Root Field Day Meet at Jenkintown several years ago, secured an original copy of this immortal work at the famous old book mart of Leary's Aside from being in a fine state of preservation, it is also an autograph copy from the author. On the sheet inside the front cover appears the following neatly written with ink: "From Rev. L. L. Langstroth to Susanna Turner, September 15, 1853."

Another valuable and interesting volume in the possession of the writer is a copy of the third edition of Huber's work entitled, "New Observations on the Natural History of Bees." On white paper, cut the size of the book pages and pasted inside the front cover by a former owner, has been copied from the Memoirs of the Empress Josephine, Vol. I, page 122, a brief account of Huber's affliction and romantic marriage. Immediately following this, the writer relates an instance quite out of the ordinary and not generally known among the beekeeping fraternity.

During the wars in which the great Napolean hoped for a fulfillment of his dreams for universal empire, Huber's wife placed pins in a map in order to give him a clearer conception of the movement of the troops.

These old works are becoming rare, and the present European conflict will no doubt destroy numbers of those valuable early records of investigation for the advancement of bee science. Such works as Swammerdam, Huber, Reaumur, Bevan you'll not pick up every day. GRANT STANLEY.

Nisbet, Pa.

Beekeeping in Arizona

I have been a close reader of the American Bee Journal since a boy of ten: had some sad experience wintering bees in Ohio, but here in Arizona we leave the bees under our brush sheds with the supers on all winter, the bees flying nearly every day: therefore, they use more honey than they do in a northern climate.

B. A. HADSELL.

I run from 11 to 16 apiaries, or 1300 to 1700 colonies without help except in swarming and extracting. My bees are in reach of 1200 acres of alfalfa also mesquite, with an irrigating canal and Gila river for water I run for extracted honey only; leave it on the hives until the bees ripen and seal it. I use the 10-frame Langstroth hive; usually have two supers, all combs drawn from full sheets of foundation; have one extracting outfit screened in on a low wheeled wagon.

I use the latest improved reversible extractors, run by a 2½ horse power gasoline engine. It also runs a large fan similar to an electric fan the honey runing through a a cheese-cloth strainer into a 150-gallon tank on the outside the uncapping box has a false bottom with water heated by gasoline Half of the capping box has a screen and bottom to catch the liquid honey The cappings after draining are shoveled over into another division where they melt and run into a small tank, and the wax forms into a cake. The honey being heated has lost its flavor and is also dark, and is kept to winter weak colonies

I supply a large number of stores for the retail trade, put up in 2, 3, 5 and 10 pound friction-top pails with my label with directions for melting if kept until cool weather and granulating in the fall I melt it all as I put it up over a slow fire, setting six cans in a tank of water with irons under them to allow the water to pass under, being careful about over-heating, as it takes off the flavor and makes the honey dark.

I grade my honey and set the price according to color and flavor; no dark or strong honey is put up for table use. Heretofore all grades of honey were dumped on our local market at a very low price, even the sweet water or nectar just as it comes from the flowers was extracted before evaporated or sealed and sold for honey. I am writing frequent articles in our local papers, urging the beekeepers to ripen their honey and grade it, and I also urge the consumers to always sample it before buying, as there is as much difference in honey as in butter. Two women may have their cows in the same pasture; the one makes a fancy grade and gets a good price the other can hardly give it away. So it is with beekeepers one-half mile apart, one allows the bees to ripen it and gets a fancy grade, the other extracts as fast as gathered, gets nearly double the weight, but not fit for table use. B. A. HADSELL.

Buckeye, Ariz.

The Crop in Quebec

The year 1915 was a disastrous year for me, as white clover was completely missing It is the most important honey plant of Quebec. I harvested only 750 pounds of honey, and I had to feed over 800 pounds of sugar syrup for winter.

Many apiarists of my region lost 40 to 50 percent of their colonies during the winter. Mine were put in the cellar Nov 6, and were taken out April 28, 1916—174 days in the cellar.

This year, white clover was everywhere, in the meadows and the pastures. We had 15 rainy days in June and 5 in July The crop began on July 1 and ended July 25, but in that short time my 112 colonies harvested nearly 90 0 pounds of honey and increased to 160 strong colonies for winter The colony on scales increased at several times 12 and 13 pounds per day. Its total increase in honey weight was 187 pounds. Of this, the storage in supers was 140 pounds Some of our best colonies reached 200 pounds. How is that for 25 days of harvest?

JACQUES VERRET.

Charlesbourg, Quebec. Sept. 5.

How to Prevent Robbing

I am 16 years of age and beginning beekeeping, and have a few colonies of my own. I have watched my bees continually, and as some bees were inclined to rob their neighbors I tried to devise some way to prevent this. I have a bottom board which extends about 3 or 3½ inches in front of the hive entrance (or a small porch) over which I placed a small board 1 or 1½ inches wide. As the robber bees try to sneak into the hive they have to alight and walk a short space; otherwise they would fly right inside or rush by the guards. This is not necessary except on a weak colony.

Hoping that this will perhaps benefit others, as I think it has helped me.

CAROL WEBER.

San Antonio, Tex., June 26.

[The idea expressed in this letter from one of our young lovers of the bee is correct. Anything which will compel the robbers to walk a few steps as they pass by the entrance guards will prevent robbing. A short tunnel made of lath, covering the entrance will serve a similar purpose. But the best thing in our opinion is a bunch of loose, fine grass thrown over the entrance. The guards station themselves in this and no robber can get by except where the colony is so utterly demoralized that they have no guards. Then, if the colony is worth saving, and if you can ascertain which is the robbing colony, the only safe thing to do is to "swap" them, place the one on the stand of the other. But if the robbed colony is queenless, it is best to break it up and give its bees to a neighboring hive.—EDITOR.]

The Iowa Beekeepers' Association will hold their fifth annual meeting at Des Moines, Dec. 5 and 6. Everybody who keeps bees or loves the bees, is invited to come and will be welcome. The meetings will be held in the Chamber of Commerce in the Shops Building, corner of Eighth and Walnut Sts.

Write for program and other information which will be mailed as soon as issued.

HAMLIN B. MILLER, *Sec.-Treas.*

Marshalltown, Iowa.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

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FINE three-banded Italian queens. Circular and price list free.
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THE best Italian queen that can be had, $1.00; 6 for $5.00, June to November.
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LEATHER COLORED "Nutmeg strain" of queens, $1.00; doz., $10. Tested, $1.50. Special price on large lots. Return mail.
A. W. Yates, 3 Chapman St., Hartford, Conn.

A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
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FOR SALE—Good Italian queens, untested 75c; tested, $1.00; nuclei, 2-frame, $3.00; 1-lb. package, $2.00; 2-lb. package, $3 00. Untested queen with bees at above prices. Will begin to send about April 1st. G. W. Moon,
1904 Park Ave., Little Rock, Ark.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

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COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
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PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

NO. 1 white comb $3.50 per case; No. 2, $3.00 No. 1 fall comb, $3 00; No. 2, $2.50; 24 sections to case. Extracted in 60 pound cans, clover, 9c; amber, 8c; amber in pails, 6, 10 pound or 12 5-pound to case at $6.00 per case.
H. G. Quirin, Bellevue, Ohio.

QUEENS, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed.
H. C. Clemons,
Rt. 3, Williamstown, Ky.

HONEY WANTED—We are in the market for light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same
Dadant & Sons, Hamilton, Ill.

FOR SALE—65 cols. Italian bees $4 00 per col.; 10 cols. hybrids, $3 50 per col. All from J. T. Moore's strain, and in 8-frame hive bodies in winter cases; standard full depth self-spacing Hoffman frames, 8 to each hive, all combs straight; cols. strong and healthy with stores for winter; would bunch the lot for $3 25 per col.; a few untested Italian queens, 60c each.
Wilmer Clarke,
Earlville, Mad. Co., N. Y.

SUPPLIES.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.
White Mfg. Co.,
4Atf Greenville, Tex.

WANTED 300 wired extracting frames for 8-frame Hoffman hives; 5⅜ deep. Must be in good condition. State price.
L. M. Johnson, L Box 77, Fortuna, Mo.

Q-C. hive yields, on account of its protectiveness, equable temperature, broodnest work incentive, etc., sixty pounds more than average of others. Can you afford to not test it? Address, W. F. McCready,
Box 2, Estero, Fla.

HONEY LABELS

HONEY LABELS that have broken away from the all-look-alike bunch. Made to suit your ideas. Lowest prices. Samples FREE.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

MISCELLANEOUS

PRINTING FOR BEEKEEPERS—Noteheads envelopes, cards, tags etc. printed and post paid. 1000 of either, $2.15; 500, $1.30; 250, 95c. Fine stock and cuts used. Lowest prices in the United States. Complete line of samples and price list free.
Rennecamp Printing Co., McKees Rocks, Pa.

HONEY AND BEESWAX

CHICAGO, Sept. 16.—The supply is heavy, but the quality is of the best where it has been properly ripened. Dealers are expecting to sell more than the usual quantities, as the flavor is of the kind that asks for the second helping. Extra fancy comb in sealed cartons, 16c per pound; fancy comb or not in sealed cartons, 15c per pound; No. 1, 14c; No. 2, 12@13c. Extracted, white, in cans, 7@8c per pound; light amber, 6@7c; light amber in barrels, 6@6½c; amber in cans, 5@6c; amber in barrels, 5@5½c. Beeswax, 30@32c if clean and yellow.
R. A BURNETT & CO.

CINCINNATI, Sept. 16.—The demand for comb honey is not as good as it was last season. We are selling No. 1 comb honey, 24 sections to the case, at $3 75 per case; lower grades are not wanted at any price. White clover extracted honey in 60-pound cans at 7½@9c Amber extracted in barrels from 6½@7½c. The above are our selling prices, and we buy at less than the above prices.

We are paying 28c a pound for choice bright yellow beeswax.
THE FRED W. MUTH COMPANY.

SAN ANTONIO, Sept. 14.—Stocks of honey, both bulk comb and extracted are getting very much lighter and prices continue to rule higher. Buyers are becoming excited over the possibility of not being able to supply their already booked orders, and there has been a distinct stiffening in prices received by producers. Bulk comb honey is nearing a 10c basis, and extracted honey is raising from 7@8c, according to color and quality. Wholesale stocks are very light in Texas at present Beeswax is still quoted at 25c cash and 27c exchange basis.
SOUTHWESTERN BEE CO.

KANSAS CITY, MO., Sept. 16.—The honey market here, on account of a large crop of native honey this year, is slow. Some Colorado honey is being shipped in here in carlots and is selling at $3.00 per case. Native honey is being held at $3.25, but it looks as though the market will decline to $3.00.

There is a fairly good demand for extracted honey, same selling from 7½c for the dark amber to 8½c for white clover
C. C. CLEMONS PRODUCE COMPANY.

DENVER, Colo., Sept. 19.—We are selling new crop comb honey in the local market at the following jobbing prices; Fancy, per case of 24 sections, $3.38. No. 1, $3.15; No. 2, $2.93. White extracted, 8½@8¾c per pound; light amber, 8@8¼c per pound, and amber 7@8c per pound We pay 26c per pound in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.
THE COLO. HONEY PRODUCERS' ASS'N
F. Rauchfuss, *Mgr.*

NEW YORK, Sept. 18.—The new crop of honey from nearby is now beginning to arrive in small lots, but the market is still unsettled, and prices are not firmly established. We are of the opinion that comb honey will sell as follows:

Number 1 and fancy white, 14@15c; No. 2 and amber 12@13c; buckwheat and dark, 10@11c. Extracted white clover, 7@7½c; light amber, 6½@7c; buckwheat, 6½@7c, and West India honey continues to arrive quite freely and prices are ranging from 58@62c per gallon, according to quality.

Beeswax is selling at 30@31c for domestic and 28@29c for West India.
HILDRETH & SEGELKEN.

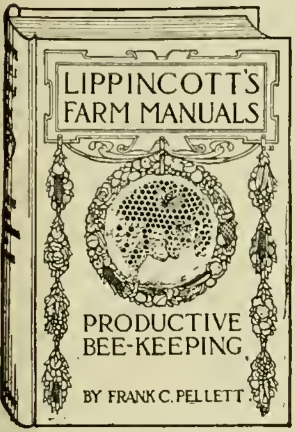
California Fair Building Burns

We have just received news that the Agricultural Building at the California State Fair burned with a total loss of building and contents amounting to about $260,000.

All exhibitors of honey, bees, etc., lost everything and all valuable county exhibits were also destroyed. One exhibitor writing to us says, "We hope to do better next year." Evidently he has learned the value of advertising.

A BEE BOOK FOR THE PRACTICAL MAN

IS "PRODUCTIVE BEEKEEPING," by Frank C. Pellett



Mailing Weight, 3 Pounds

State Bee Inspector for Iowa and a Practical Beekeeper as Well

One of Lippincott's "Farm Manual" Series, this book of 326 pages is finely gotten up, finely bound, and has 134 illustrations, nearly all original with the author. Price, $1.50.

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1. BEEKEEPING A FASCINATING PURSUIT
2. THE BUSINESS OF BEEKEEPING
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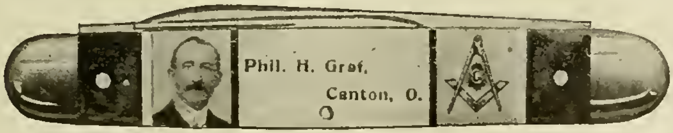
4. ARRANGEMENT OF THE APIARY
5. SOURCES OF NECTAR
6. THE OCCUPANTS OF THE HIVE
7. INCREASE
8. FEEDING.
9. PRODUCTION OF COMB HONEY
10. PRODUCTION OF EXTRACTED HONEY
11. WAX—A BY-PRODUCT OF THE APIARY
12. DISEASES AND ENEMIES OF BEES
13. WINTERING
14. MARKETING THE HONEY CROP
15. LAWS THAT CONCERN THE BEEKEEPER

Productive Beekeeping
Langstroth on the Honey Bee
} **Both postpaid for only $2.50**

Productive Beekeeping
"Fifty Years Among the Bees"
} **Both postpaid for only $2.25**

American Bee Journal, Hamilton, Illinois

BEE-KEEPER'S NOVELTY POCKET-KNIFE



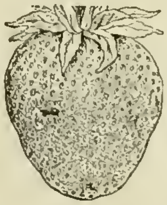
Your Name and Address will be put on one side of the handle as shown in the cut, and on the other side a picture of a Queen-Bee, a Worker-Bee, and a Drone-Bee. The handle is celluloid, and transparent, through which is seen your name. If you lose this Knife it can be returned to you, or it serves to identify you if you happen to be injured fatally, or rendered unconscious. The cut is the exact size. We have succeeded in getting this knife made in lots from genuine car-van steel. It is especially well tempered and keeps its edge remarkably. When ordering be sure to write exact name and address. Knife delivered within two weeks after we receive order.

Price, postpaid, $1.00; or with a year's subscription to the American Bee Journal—both for $1.80; or given FREE as a premium for sending us 3 New subscriptions at $1.00 each.

American Bee Journal, Hamilton, Illinois.

Life of the Bee, by Materlinck.—This author, who is acknowledged by every one as one of the finest prose writers, applies the romanitic side in discussing the honeybee. The book reads like a fairy tale, and it is as interesting as a novel. His knowledge of the traits of the bee is only fair; his aim being to discuss the romantic side of the queen, the drone and the swarm. The book is well bound and well gotten up, and is a pleasure for any one to read. Price, postpaid, $1.40, or with the American Bee Journal, both for one year, $2.00.

Beekeeping, by Dr. E. F. Phillips, In Charge of Bee Investigations at Washington, D. C., and an authority on the subject. This book has just been issued, and is of such a caliber that it should be in every beekeeper's library. It contains some of the later experiments, and has a very valuable chapter on wintering. A well bound, well illustrated and a good book. Price, $2.00; postage extra. By special arrangement we can offer this book, postpaid, together with American Bee Journal one year, both for $2.50.



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Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

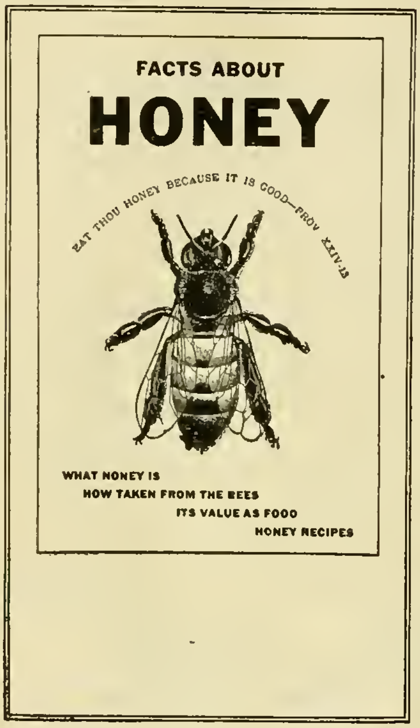
Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

"ROUGH ON RATS" ends **RATS, MICE,** Bugs. Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminat at Drug & Country Stores. **Economy Sizes 25c. 50** Small 15c. Used the World Over. Used by U. S. Gov **Rough on Rats Never Fails.** *Refuse ALL Substitutes.*

Quinby's New Beekeeping, by L. C. Root.—This is a modern edition of "Quinby's Mysteries." Mr. Quinby is well known to all beekeepers. He, with Mr. Langstroth, was responsible for much of the early growth in beekeeping in America. Cloth bound, 220 pages. Price, postpaid, $1.00, or with the American Bee Journal for one year, $1.75.

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

FACTS ABOUT HONEY



FACTS ABOUT

HONEY

EAT THOU HONEY BECAUSE IT IS GOOD—PROV XXIV-13

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the 'Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra -	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " " -	9.00
30 " " -	.75	2000 " " " -	17.00
50 copies, postage extra -	.75	5000 " " " -	40.00
100 " " " -	1.25	10,000 " " " -	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

American Bee Journal, - Hamilton, Illinois

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., **Marshfield, Wis.**

EARLY ORDER DISCOUNTS WILL
Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

START THE SEASON RIGHT

By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE
SAVES
HONEY
TIME
MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

FREEMAN'S FARMER North Yakima, Wash.
Successor to Northwest Farm and Home
69 YEARS OLD

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Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

Beekeepers' Supplies

Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.

J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST
BEE SUPPLIES
Best Sections, **Best Shipping Cases**
Best of all Supplies

Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.

H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.

AUG. LOTZ CO. BOYD, WIS.

Queens and Bees
FROM THE COTTON-BELT APIARIES

Will and **must** please you. Three-band Italians only Prices from May 1st to July 1st as follows: Queens, untested, 75c each; $4.00 for six or $7.50 per dozen. Tested $1.00 each; $5.70 for six, or $10.75 per dozen. Select tested, $2.50 each. Breeding queens, $5 00 each. One pound package bees, $1.25; 25 packages, $1 00 each; 2-pound package, $2.25 each; 25 packages, $2.00 each; 3-pound package, $3.25 each; 25 packages, $2 75 each.

Special prices on larger quantities booked early. Twenty years experience. No disease. 75 percent of untested queens guaranteed purely mated. Safe arrival and reasonable satisfaction guaranteed.

THE COTTON-BELT APIARIES
Box 83, Roxton, Texas

A FINE untested Italian Queen for 60c. Tested, $1.00. Satisfaction guaranteed.

J. F. ARCHDEKIN
Bordelonville, La.

Lumber That Lasts?

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

Here's a Convincing Case of an Experienced Beekeeper

Who (but let the gentleman tell it himself):

BUCK GROVE, IOWA, February 2, 1916.

"I have been a Cypress man for lo, these many moons Almost all my dovetail hives are of Cypress, as are bottom-boards, and I think, shallow telescope covers. My hive stands are of Cypress, and stand in the mud and wet all the time and are as solid as when I got the first one some years ago. Cypress is a trifle heavier than white (cork) pine, but not much more than the heavier grade of Pine now used. The fact that it is 'everlasting' compensates for all this."

(Signed) A. F. BONNEY, M. D.

For a job of repairing or for equipment, the lumber that will give you the greatest real investment value in the market is Cypress, commonly known as the "Wood Eternal." This wood does not rot down like most woods; it lasts and lasts, and LASTS, and LASTS and LASTS. It is the Gopher Wood of the Bible—Noah built his ark of Cypress. Since the days of Noah, Cypress has been famous for endurance under the most trying condition. **Cypress is the one certified Greenhouse Wood. That's "Some" test.**

GET A BOOK—IT IS FREE

There are 41 volumes in the international famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't. Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for Building; Vol. 36 is the Carpentry Book making easy a dozen hard jobs of carpentry; Vol. 19 is the Canoe and Boat Book; Vol. 37 is the Silo Book. All are free for the asking Suppose you ask for one or a dozen, right away.

WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "all-around Helps Department."

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., or
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

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DO YOU WANT

Your Bee Supplies Shipped Promptly?

We carry four to six carloads of the finest BEEWARE on hand at all times, and can fill your orders without delay. BEE-HIVES, SECTIONS, SHIPPING CASES, TIN CANS, and all other Bee Supplies also

DADANT'S FOUNDATION

by return freight, mail or express. We have forty years' experience and thousands of satisfied customers. Are you one of them?

DADANT & SONS, Hamilton, Illinois.

Dear Sirs:—The box of foundation arrived a few days ago in fine condition. I have kept bees for over thirty years, and have purchased foundation from many firms, and must say that your foundation is the nicest that I have ever used, and I wish to thank you for the prompt shipment and large amount of wax you secured for me.

Yours truly,
A. W. DARBY.

Alburg, Vt. May 3, 1916.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

NOVEMBER, 1916

Experimental Apiary at the Ontario Agricultural College at Guelph

BEE SAFETY—HOW?

By ordering Murry's queens. I have testimonials on file that my strain of bees are strongly resistant to European foulbrood, Isle-of-Wight disease and paralysis. Plenty of queens ready to ship on short notice from now until Nov. 1st. Safe arrival and satisfaction guaranteed. No disease of any kind in my apiaries. Three-banded Italians and Goldens. Untested, 1 for 75c; six for $4.00. Any number over that 62½c each. Tested 1 for $1.00; six for $5.00. Over that $10 per doz.

H. D. MURRY, Mathis, Texas

Bee-Supplies

LET US FIGURE WITH YOU

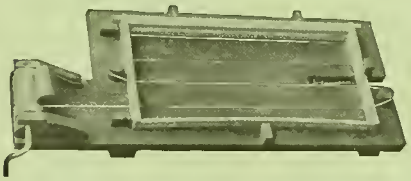
We know we can satisfy you on quality. Write for catalog.

C.C.CLEMONS BEE-SUPPLY CO.
Dept. S., Kansas City, Mo.

Northern Bred Italian Queens

More hardy than Southern bred. Try them once. Untested, 75c. Sel. tested, $1.50. Plans for beginners, "How to Introduce Queens and Increase," 25 cents.

E. E. MOTT, GLENWOOD, MICH.



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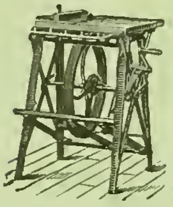
Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2 00,

G. W. Wright Company, Azusa, Calif.

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

BEE SUPPLIES

At wholesale and retail. Dovetailed hives, Marshfield sections, shipping cases, and all kinds of small needs. Beeswax wanted. Prices for the asking.

W. D. SOPER
325 So. Park Ave. Jackson, Mich.

Bees and Queens for 1916

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1916 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

Our Reference—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists.

WANTED

Experienced young man for our beekeeping supply department. One who also has a knowledge of beekeeping and is not afraid to work. Give reference and state salary expected.

THE FRED W. MUTH CO.

"The Busy Bee Men."

214 Walnut Street, Cincinnati, Ohio

FOR SALE

My good will and line of Bee Suppiles with hardware stock in connection, in a town of 1800; doing business from $8000 to $12,000 per year. The best chance for the right party to make money. Reason for selling, ill health. Write or call.

H. S. DUBY & SON, St. Anne, Ill.

Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

Grading Rules of the Colorado Honey-Producers' Association, Denver, Colo., Adopted Feb. 6, 1915.

All honey sold through the Colorado Honey-Producers' Association must be graded by these rules.)

COMB HONEY.

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey, comb and cappings white, or slightly off color. Combs not projecting beyond the wood, sections to be well cleaned. No section in this grade to weigh less that 12½ ounces net or 13½ ounces gross. The proof each section in this grade must be stamped, "Net weight not less than 12½ ounces."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

No. 1.—Sections to be well filled, combs firmly attached, not projecting beyond the wood and entirely capped, except the outside row next to the wood. Honey, comb and cappings from white to light amber in color. Sections to be cleaned. No section in this grade to weigh less than 11 ounces net or 12 ounces gross. The top of each section in this grade must be stamped, "Net weight not less than 11 ounces." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

No. 2.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 ounces net or 11 ounces gross. Also of such sections that weigh 11 ounces net or 12 ounces gross, or more, and have not more than 50 uncapped cells altogether, which must be filled with honey. Honey, comb and cappings from white to amber in color. Sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 ounces." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

COMB HONEY THAT IS NOT PERMITTED IN SHIPPING GRADES.

Honey packed in second hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured or patched up sections.

Sections containing honey-dew.

Sections with more than 50 uncapped cells or a less number of empty cells.

Sections weighing less than the minimum weight.

All of such honey should be disposed of in the home market.

EXTRACTED HONEY

Must be thoroughly ripened, weighing not less than 12 pounds per gallon. It must be well strained and packed in new cans, 60 pounds shall be packed in each 5 gallon can, and the top of each 5-gallon can shall be stamped or labeled, "Net weight not less than 60 pounds."

Extracted honey is classed as white, light amber and amber, the letters "W," "L. A.," "A." should be used in designating color, and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new, substantial cases of proper size.

STRAINED HONEY

Must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained, and if packed in 5-gallon cans each can shall contain 60 pounds. The top of each 5-gallon can shall be stamped or labeled "Net weight not less than 60 pounds." Bright clean cans that previously contained honey may be used for strained honey.

HONEY NOT PERMITTED IN SHIPPING GRADES.

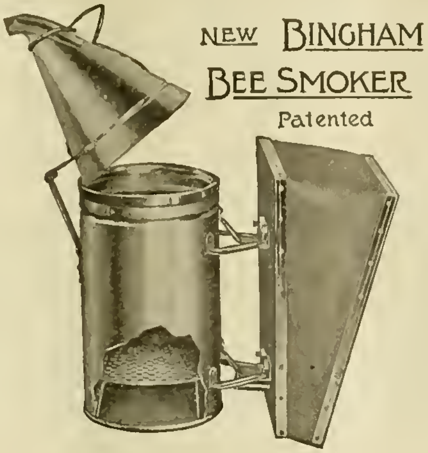
Extracted honey packed in second-hand cans.

Unripe or fermenting honey, weighing less than 12 pounds per gallon.

Honey contaminated by excessive use of smoke.

Honey not properly strained.

Honey contaminated by honey-dew.



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Doctor, 3½-inch stove..............	26 oz.	.85
Two larger sizes in copper extra.		.50
Conqueror, 3-inch stove...........	23 oz.	.75
Little Wonder, 2½-inch stove.....	16 oz.	.50

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BIGGER AND BETTER

A large number of the old articles have been rewritten. Many new articles that never appeared before in any former edition occur in this one.

THE CHEMISTY OF HONEY

A. Hugh Bryan, formerly connected with the Bureau of Chemistry, Washington, D. C., and who at the time made a speciality of honey, has written the articles dealing with the chemistry of honey, glucose, invert sugar, nectars, adulterations, etc. He has also written a special article for the benefit of chemists, on how to analyze honey.

Since the introduction of artificial invert sugars, new methods have to be employed; and these are set forth in this new edition so that any chemist will be able to use the very latest information that has been available to the Bureau of Chemistry, Washington, D. C.

BEE BOTANY

This is being handled by John H. Lovell, of Waldoboro, Maine, a beekeeper, botanist, been and an entomologist. Some new species have been added, and in other cases the descriptions have made more complete.

PRACTICAL ARTICLES

These have been revised and rewitten by the editors of GLEANINGS. All the latest methods of management have been incorporated. Articles on bee diseases have received entirely new treatment, especially those relating to European foulbrood and the Isle of Wight disease.

WINTERING

The articles on wintering will include the latest discoveries of the Bureau of Entomology pertaining to winter temperatures, winter activities and winter packing.

The new volume will contain something over 900 pages, and will sell for $2.50. It will be ready for delivery about January 1.

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No.		10	100
1	holding 24 sections, 4¼x1⅞, showing 4	2 00	18 00
3	holding 12 sections, 4¼x1⅞, showing 3	1 30	11 00
1½	holding 24 sections, 4¼x1½, showing 4	1 90	17 00
6	holding 24 sections, 3⅝x5x1½, showing 4	1 80	16 00
8	holding 24 sections, 4x5x1⅜, showing 4	1 80	16 00

Shipping Cases, With Glass

Number and description	Nld	In flat, with 3-in. glass			With 2 in. glass
		1	10	100	100
11 Same as No. 1	35	.25	$2 30	21 00	20 00
13 Same as No. 3	.22	.15	1 40	12 50	12 00
11½ Same as No. 1½	.35	.25	2 20	20 00	19 00
16 Same as No. 6	.30	.22	2 10	19 00	....
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	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu. 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
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PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

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American Bee Journal.	1.00 "

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The season of 1916, just closed, has been a most unusual one. Beekeepers who did not fortify themselves early in the season by securing their hives, sections and other goods and having their equipment ready for the bees, found when the honey season was upon them that they were up against the following conditions:

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Now, Mr. Beekeeper, What are You Going to Do About Next Season?

Prospects for a big Bee and Honey Season next year were never better than they are right now. PREPARE!! Order your goods this fall. Write us or our dealer nearest you for a list of new prices, owing to advances in raw material.

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AMERICAN BEE JOURNAL

Vol. LVI.—No. 11 HAMILTON, ILL., NOVEMBER, 1916 MONTHLY, $1.00 A YEAR

GLIMPSES OF ONTARIO

Scenes Visited by Our Staff Correspondent During a Visit With Our Northern Neighbors

IT was June, the days were balmy and flowers bloomed everywhere. It had been raining day after day until the farmers were in despair. But the clouds had recently lifted, and, being neither hot nor cold, the season was delightful. Ontario is a beautiful country in summer, and June is the month to see it at its best. My first stop was at Chatham, where I was royally entertained by Mr. W. A. Chrysler, who is one of the well known beemen of the province. At one time Mr. Chrysler was extensively engaged in the supply business, but a disastrous fire which made it necessary to begin at the bottom again as far as manufacturing was concerned, decided him to take up the production of honey again as his principal dependence. He now has several apiaries, but operates a central extracting plant, preferring to bring the honey home to extract rather than to carry a small outfit from yard to yard. Mr. Chrysler has a son who is a genius with machinery and who has fixed up many handy contrivances about the extracting house. They are fortunate in being situated in the natural gas belt and run all machinery with natural gas. The son has made over a gasoline engine to run with gas so that their extractor and such other machinery as they use is run by this power. The settling tanks are ranged in a row along one side of the honey-house with overflow pipes from one to another so that there is no danger of running over.

An automobile is used for going to and from the outyards. Our first illustration gives a good idea of the light crate which is used to hold the load. All about the place are evidences of a mechanical handy man, and if space would permit a whole page might be used to describe the various shortcuts which they practice. In the October issue we already gave an account of the Chrysler feeder and bottom combined which they use under their hives. The second photograph shows a corner of the home yard. It was formerly surrounded by a solid board fence, but every other board has been removed and it still breaks the wind and avoids the suction which was formerly noticeable as the wind swept down over the fence.

In Mr. Chrysler's car we made the trip to Merlin on the lake shore to visit the Deadman apiary. Mr. G. A. Deadman, who is a druggist at Brussels, spends his summers with his bees at Merlin. He has 350 colonies in one yard, which is probably the largest number kept in a single yard in the province. Beside the honey-house is a long open shed for storage purposes and some enclosed rooms to furnish the beekeepers with pleasant quarters during their summer stay. Mr. D. Barone, of Italy, son of a well-known Italian writer on beekeeping, and himself a beekeeper of note, was assisting Mr. Deadman for the summer. Miss Freya Hahn, of Toronto, was also there, serving an apprenticeship. The writer met an unusual number of ladies who are beekeepers in Ontario, and fully as enthusiastic as the men.

One would question the possibility of support of such a large number of colonies in one yard, but in a favorable season the average production is around 100 pounds surplus per colony which we would regard as very good in the Mississippi Valley States. Mr. Deadman uses a brood-frame 12½x11¾, which is a size not commonly used. However, he seems to be well satisfied with results obtained from its use. The ground about Merlin is very level, and because of the excessive rainfall during the spring, there was some difficulty in

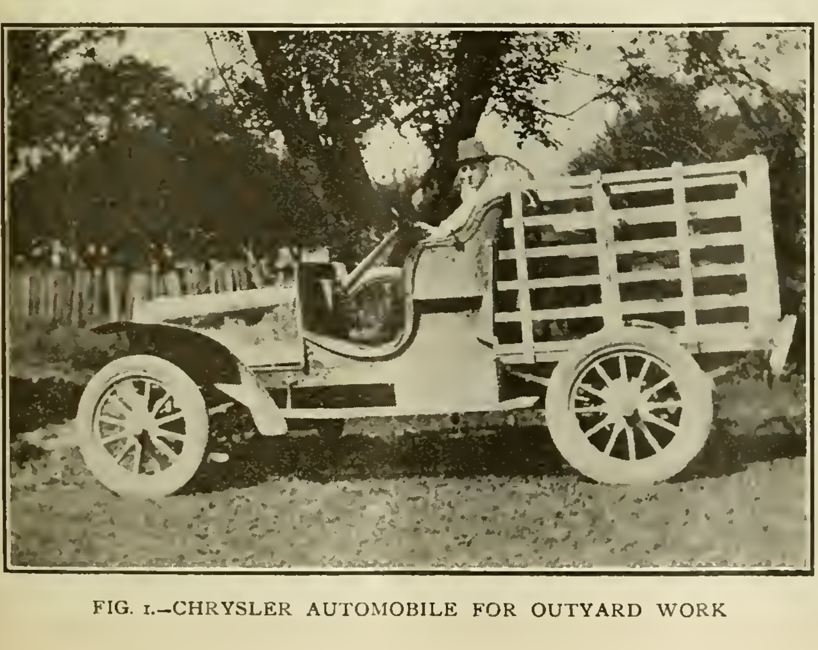

FIG. 1.—CHRYSLER AUTOMOBILE FOR OUTYARD WORK

keeping the hives dry. Water was still standing about, and we were informed that it was very unpleasant earlier. However, the big clover flows usually follow a surplus of moisture and a bumper crop has been reported in many sections of Ontario this season. Instead of using one large extractor as is often the case in large apiaries, two 4-frame extractors run from a line shaft are in use at the Deadman apiary. The contention is that two 4-frame extractors can be run to better advantage than one 8-frame machine and with less power. While one is running, the other can be filled so that the whole outfit is not idle during the time necessary to change frames, as is the case where a large machine is used. The super cleaner described last month is a unique device which originated here.

At Lambeth there are three extensive beekeepers within a stone's throw of each other. Two live on adjoining lots and the third lives across the street. In our last number we showed the picture of Mr. W. D. Campbell, and Fig. 4 in this issue shows the other two, Mr. E. T. Bainard and Mr. D. Anguish. Mr. Bainard very generously took his car and drove to as many yards as there was time to see. At Mr. Campbell's yard we found the 4-piece section in use. Mr. Campbell follows the plan advocated by Dr. Miller of using two hive bodies for brood-rearing, reducing to one set of frames for the honey flow.

Mr. Bainard uses the Heddon sectional hive very successfully. I have always been prejudiced against this hive until I saw it in use by men who produce very large crops of honey in Ontario. It must be admitted that in the hands of skillful men it brings good results. Still I often wonder whether the men who get such crops with these shallow hives, would not get more honey if they used a deeper frame. Beekeeping after all depends mostly on the man. Figure 5 shows the colonies arranged in groups of four, which permits the use of quadruple winter cases without moving them.

Mr. Bainard is a great experimentalist, and certainly has his head full of interesting ideas. At the time of my visit he was endeavoring to learn whether by means of a frame placed between two of the shallow hive bodies, horizontally instead of vertically, all queen-cells would be placed there. If so, it would be an easy matter to ascertain when the colony was preparing to swarm by looking at the one frame instead of having to look through the whole colony. Some of the colonies were building queen-cells on these flat combs, and I await with interest the result of the summer's experiment. He has tried pound packages from the south for increase for several years with varying results. Some seasons when conditions were favorable he has had a single pound of bees build up and produce as much as 60 pounds of surplus honey. However, he has found great variation with the different packages received at the same time and given the same attention. Probably better results will come after more attention has been given to the selection of breeding stock. Mr. W. E. Wright, of Glanworth, is a farmer who keeps bees as a sideline. He has a fine flock of prize winning sheep and has carried away many of the blue ribbons at the Toronto show for many years. His apiaries, while not as extensive as those of exclusive beekeepers, still add materially to the revenue of the farm.

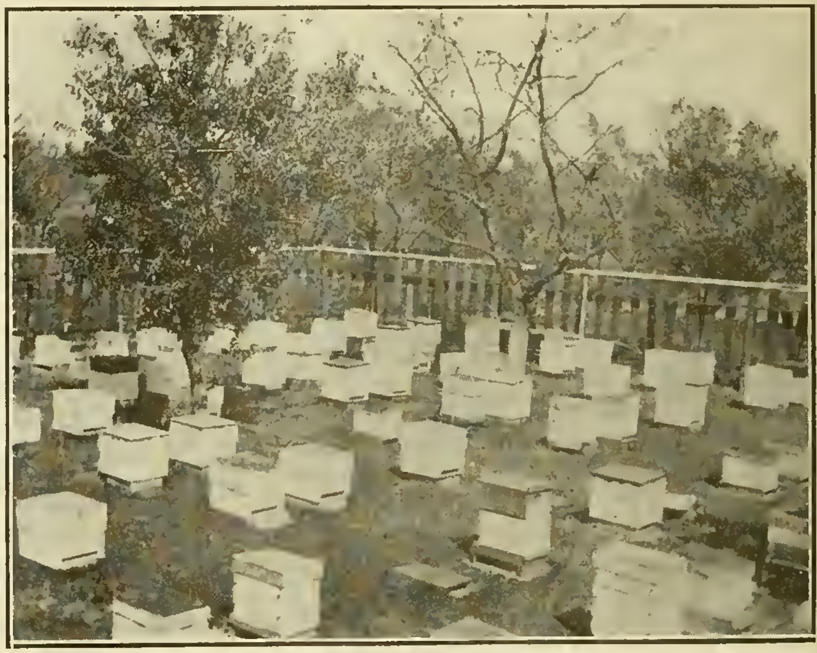
FIG. 2.—THE CHRYSLER HOME APIARY AT CHATHAM, ONTARIO

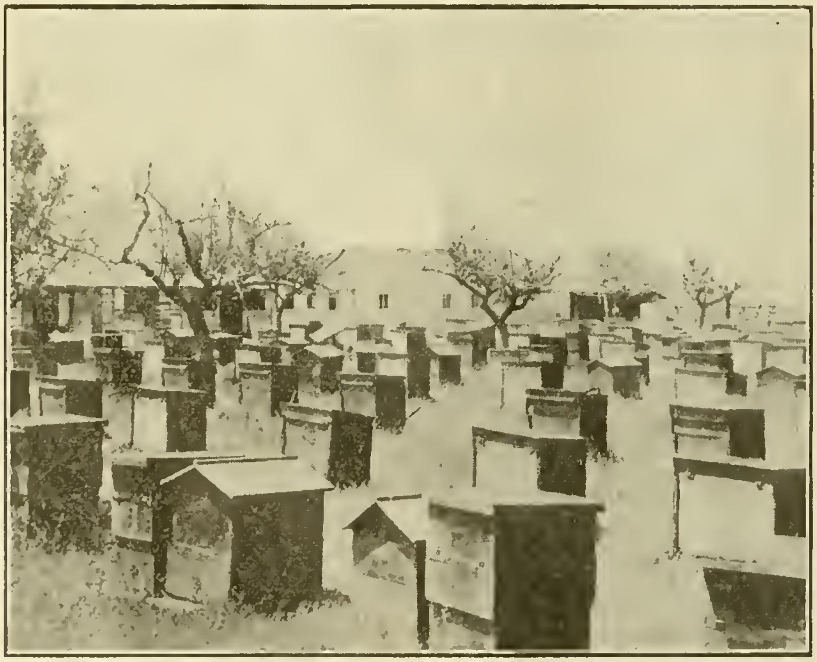
FIG. 3.—THE BEES IN THE DEADMAN APIARY ARE LEFT IN THE PACKING CASES UNTIL JUNE

Mr. F. W. Krouse, President of the Ontario Association, is located near the Agricultural College at Guelph. Our impressions of the school are given in a separate article. Mr. Krouse began with two colonies in connection with market gardening and has gradually extended his apiaries and dropped other lines. He has several yards within a few miles of Guelph and expected to have nearly 500 colonies at the close of this season. There is an abundance of willow and dandelion to start with. In addition there is white clover, alsike, basswood and buckwheat so that failure at this particular apiary has never yet occurred. Since something always yields, and in some seasons everything does, his average in this yard is about 100 pounds per colony per year. If it were possible to find such locations for all his bees, Krouse would have a bonanza. However, he is doing very well and finds a ready sale for his honey at profitable prices.

The winter case described in our last

issue is in evidence in all his yards. It can hardly be called a winter case since it remains in place all the year around. Two of his outyards are shown herewith. In one is shown a honey-house on wheels. It was formerly used as a show wagon, and is well adapted for the purpose to which Mr. Krouse has put it.

Miss R. B. Pettit, who is a sister of the Provincial Apiarist, is a very successful beekeeper. She lives at Georgetown. Her brother, Prof. Pettit, gives her some assistance during his vacation times in order to keep in practical touch with the work. A teacher who lives always in contact with books is likely to become stale, and he is a wise one who takes off his coat occasionally and gets into the real work of his specialty.

FIG. 4.—MR. E. T. BAINARD AND D. ANGUISH, OF LAMBETH, IN THE LATTER'S APIARY

At each place visited we found abundant material for a whole story, but our space will only permit of a brief glimpse, and we are compelled to hurry on. At Beamsville Mr. A. E. Hoshal is extensively engaged in honey production. Like Mr. Bainard he uses the Heddon hive. We spent some interesting hours with him. His metal winter case described last month is light, inexpensive and easy to handle. It impressed the writer as the best all around winter case for a single colony that he had seen. Nearly every really successful beekeeper has developed something new, which his particular system or location makes practical, and the visitor is quick to note these new ideas. Mr. Hoshal is very efficient in his methods, and everything about the apiary is planned to eliminate unnecessary labor. His excluders are painted blue, bee-escapes red, and screens still another color, so that in passing through the yard he can tell at a glance what is on any particular hive.

At Niagara Falls, Ont., we found a very complete outfit for honey production at the home of Mr. U. H. Bowen, who is a member of the government customs staff. Mr. Bowen has suffered an unusual loss of bees the past season in a very mysterious manner. All his bees were wintered in the large cellar under his two-story honey-house. When removed from the cellar near the middle of April they seemed to be in good condition. One hundred and twenty colonies were left in the home-yard and 100 colonies removed to an outyard. Of the 120 colonies in the home-yard less than 20 had any bees at all at the time of my visit in June, and only one of these was strong enough to build up without help in the way of brood or bees. Many of the hives contained a queen and only a dozen or two of bees. At the outyard conditions were much better, although evidences of the same trouble were to be seen. Some of the colonies were working in supers, and there was a prospect for something of a crop. Few colonies were lost entirely at the outyard.

The trouble started suddenly on a warm day in early May. After a rain adult bees were to be seen everywhere in the grass. They could not fly, but jumped about in front of the hives in an effort to do so. The newly emerged bees which had not previously gone afield seemed to be affected worse. By the middle of June the entire apiary was practically gone. Colonies which were short of stores and those which had an abundance of honey were alike affected. Mr. Bowen could offer no explanation of the trouble neither could Prof. Pettit. The writer has heard this strange condition discussed among beekeepers several times the past summer, and the only plausible explanation offered is that the bees had been poisoned in some way.

Mr. Bowen has a very fine honey-house which is shown at Fig. 9. On the main floor there is a power-driven extractor, capping melter, honey pump and every possible convenience for handling the honey with a minimum of trouble. The upper story is used for storage. At the outyard there had been some meddling with the bees at night, so Mr. Bowen placed a warning sign on a post at the corner of the yard. Figure 8 shows how a robin took advantage of the protection of this sign to build her nest on the post.

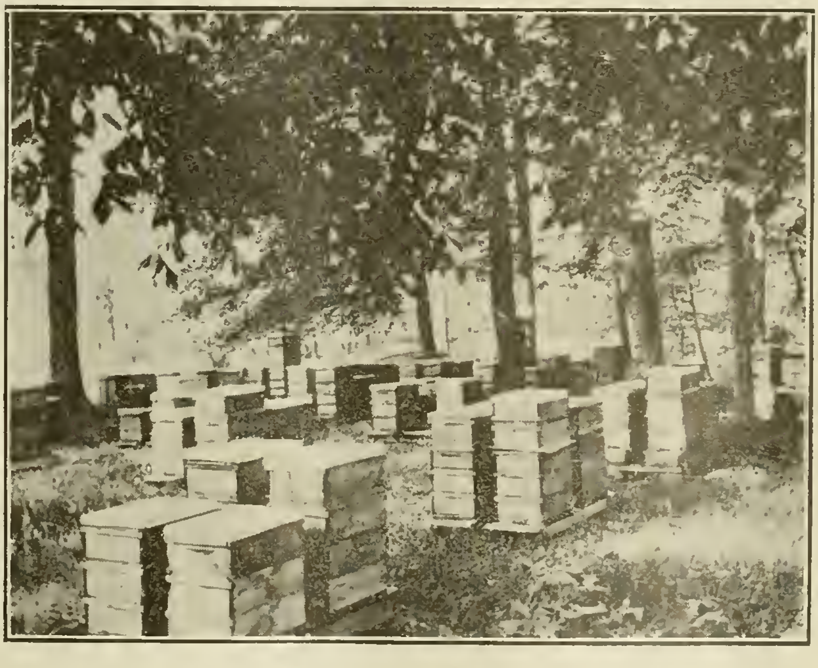
FIG. 5.—ONE OF THE BAINARD APIARIES IN HEDDON HIVES

Some Prominent Ontario Beekeepers

BY MORLEY PETTIT, PROVINCIAL APIARIST.

I HAVE been asked to give an account of some leading beekeepers in Ontario. There are about 10,000 persons keeping bees in Ontario, and many of these are making a considerable portion of their living from them. It will be seen, then, that the number of persons who might be called "leading beekeepers in Ontario," is greater than the space limits of this article would cover. Besides those at present actively engaged in the industry, there is also a long list of men who have had their part in bringing the industry to its present status and should not be overlooked. It is hoped, therefore, that the following records will be considered as only a partial list, rather hastily gotten together, in which many persons worthy of mention have been overlooked.

As the industry has centered largely around the Ontario Beekeepers' Association, an organization which has been active for about 37 years, it will not be out of place to sketch briefly the history of this association, giving special attention to those who have taken an active part in its development.

The organizing meeting of the Ontario Beekeepers' Association was held in the City Hall, Toronto, Aug. 14, 1880. There were about 60 beekeepers present, representing all sections of Ontario, and some from the United States and Manitoba.

The following officers were elected:

President, D. A. Jones, Beeton; Vice-presidents, Dr. Shaver, Stratford, and Hon. Lewis Wallbridge, Belleville; Secretary - Treasurer, R. McKnight, Owen Sound.

Although the association was organized as the "Canadian Beekeepers' Association," it was soon after changed to its present name.

The earliest record we have of the new president, Mr. D. A. Jones, is in 1871, when he reported in the American Bee Journal, page 56, an apiary of six stocks in movable frame hives and one box hive. From the six he took 1707 pounds and nine swarms. He also had apiaries away from home managed by friends. In 1879, he reported 600 colonies in four apiaries, with a crop of from 50,000 to 70,000 pounds. He gave white clover, basswood, raspberry and thistle, willow-herb, goldenrod, and boneset as his main honey plants, and was at that time experimenting with white sweet clover. For few a years he maintained a School of Apiculture, using young Canadians who were anxious to learn the business as assistants in his apiary. Some of our leading Ontario beekeepers received their first lesson in this way.

In 1880, along with Frank Benton, of Washington, D. C., Mr. Jones visited Italy, Cyprus, Palestine and other Eastern lands in search of new varieties of bees. He sent home samples of Cyprian bees, Holy Land bees and others, and expected great things from them. While they seemed to be good workers, they had objectionable features, however, and have not come into general use.

Mr. Jones was one of the first to exhibit honey at Toronto Fair, that great annual exhibition, which has developed into the present Canadian National Exhibition, recognized as the greatest annual fair of this kind in the world. He also did a considerable amount of speaking at local beekeepers' conventions.

The president of the Beekeepers' Association in 1882, was the Hon. L. Wallbridge, of Belleville. His town was the center of beekeeping activities in the early days, the Bay of Quinte Beekeepers' Association being located in that district.

The vice-president that year was Mr. J. B. Hall, of Woodstock. Mr. Hall was one of the best known pioneer beekeepers of Ontario, being a successful producer of comb honey, and an extensive exhibitor at Toronto Fair. He lived at Woodstock, was a most careful and thorough man, and some of our most successful beekeeeprs at the present day were students of his; the best known perhaps being Mr. John Newton, of Thamesford, who is at present a director of the association. Mr. Hall was president in 1895, and was for a number of years after that an honorary member of the association.

In 1883, another pioneer, Mr. R. McKnight, of Owen Sound, occupied the chair. Mr. McKnight is one of the very few founders of the association still living. At last reports he was living retired at Owen Sound, and for a number of years has not taken an active part in public life.

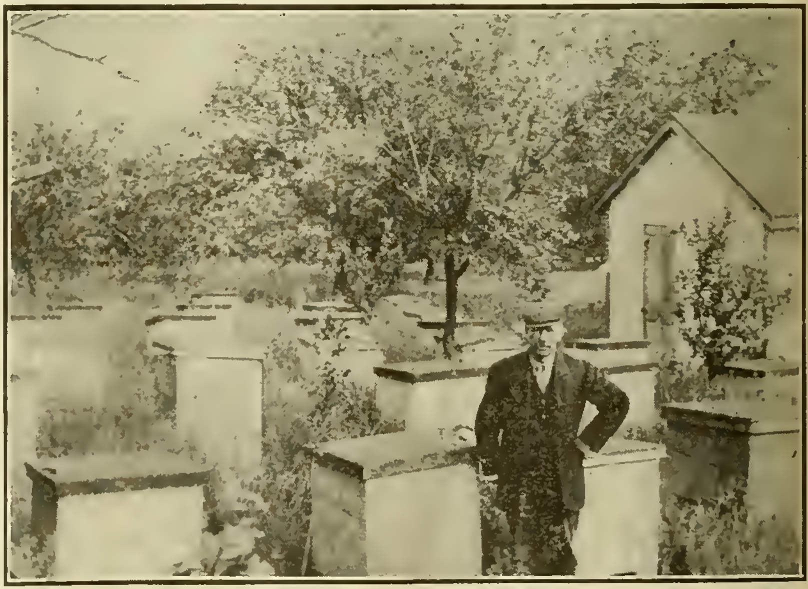

FIG. 6.—A KROUSE OUTYARD WHERE THE AVERAGE IS 100 POUNDS PER COLONY

The secretary-treasurer that year was Mr. R. F. Holtermann, who is well known to beekeepers of the present day. He was president in 1896, and is still actively engaged in beekeeping, being manager of something like 800 colonies for the firm of Foster & Holtermann of Brantford. These apiaries are located in one of the best alsike districts of Ontario. Mr. Holterman., has always been a doer of big things. He was at one time editor of the Canadian Bee Journal, and manager of the leading bee supply business in the country. When he took up beekeeping more extensively and gave up the supply business, he built two very large bee-cellars in the vicinity of Brantford for two different firms in successive seasons. Neither of these cellars is at present being used for bees, however, as outdoor wintering was found to be more practical. Three 12-frame extractors are used in the business at present, also, of course, an automobile and motor truck for transportation. For a number of years he has conducted a sort of School of Apiculture, training young men to become beekeepers in the extensive operations in the large apiaries of which he has charge.

In 1884, the president was Mr. S. Corneil, of Lindsay. Mr. Corneil's son, George, is at present a successful beekeeper in that town. George Corneil is one of the many examples of men giving up other lines to become beekeepers. During a time when he was out of employment in his regular trade on account of a strike, he took up beekeeping. By the time the strike was over he was making more from his bees than he had ever made from his trade and therefore, refused to go back, so he is now a successful beekeeper.

Dr. Thom, of Streetsville, was president in 1885, and during the years of 1886 and 1887, the chair was occupied by Mr. S. T. Pettit, of Belmont. This was rather an important period in the life of the association, as the first large honey exhibit was sent abroad, namely to the Intercolonial Exhibition in London, England, in 1886. Legislation was also secured at Ottawa, to protect the purity of Canadian honey from adulteration and imitation. A thorough workman and careful investigator, Mr. Pettit did much to improve methods of comb honey production. He was also very successful with cellar wintering.

The president in 1888, was Martin Emigh, of Holbrook. Mr. Emigh is a quiet man of sterling qualities, and for a number of years after occupying the president's chair he acted as treasurer of the association. We have not seen anything of him lately at beekeepers' meetings, but hear that he has become prominent in local telephone circles in his own district.

Another outstanding character in Ontario beekeeping and agricultural life in the early days was Mr. Wm. F. Clarke, former editor of the American Bee Journal, who was president of the Beekeepers' Association in 1889. He was the first lecturer in beekeeping at the Ontario Agricultural College, and the writer frequently hears amusing stories of his experiences with the students. It seems that he was not always able to hold their attention, and to quiet them would promise to recite some of his verses at the end of the lecture if they would be good. These would be quotations from a little volume of verses which he published in 1886, entitled "Bird's Eye View of Beekeeping." Readers of the American Bee Journal will appreciate the following extract:

> "Take a bee-paper, that you may find out
> What other Apiculturists are about.
> Unless you read the journalistic page,
> You'll fall behind the progress of the age.
> Journals abound, from the 'American'
> That five and twenty years ago began
> Shedding the light of knowledge to and fro,
> To the 'Canadian' which a year ago,
> Boldly its banner to the breeze unfurled,
> The first $1 weekly in the world."

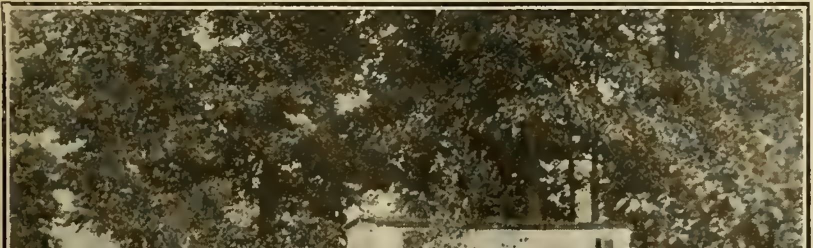

FIG. 7—AT ONE OF THE KROUSE YARDS AN OLD SHOW WAGON IS USED AS AN EXTRACTING HOUSE

During the time that Mr. Clarke occupied the chair, legislation for the suppression of foulbrood was passed by the Ontario legislature, and Mr. Wm. McEvoy, was appointed Provincial Inspector, under the direction of the Beekeepers' Association. While not the first discoverer, Mr. McEvoy was the first to bring promptly before the beekeeping world the method of treating foulbrood, to which his name has been attached. He acted as the sole inspector in Ontario for nearly 20 years, and came to be well known for his genial nature and ready Irish wit from one end of the province to the other. At every convention as long as he lived, Mr. McEvoy was always on hand to do his part in keeping things going in the way of discussion, controversy and fun. Aside from discussions of bee-disease, I believe one of his best ideas was one which usually caused a laugh, not so much at the idea as at the quaint way he had of expressing it. He said that during the spring the larvæ must always be well fed to keep them "fat." If the larvæ were not kept "fat," they would not develop healthy bees. He was the first, so far as I can learn, to publicly advance the idea that spring stimulative feeding is not so much to stimulate the queen, as to stimulate the nurse bees to make them feed the larvæ well, and as he expressed it, "keep them fat." The McEvoy apiaries are now managed by his sons—most capable young men.

During 1890 and 1891, Allen Pringle, of Selby, was president, and in 1892 and 1893, Mr. F. A. Gemmell, of Stratford, occupied the chair. Mr. Gemmell is best known on account of improvements he placed on the Hatch wax-press, which came to be called the Hatch-Gemmell press.

In 1894, the president was Mr. A. Pickett; in 1895, Mr. J. B. Hall, and in 1896, Mr. R. F. Holtermann.

J. K. Darling, of Almonte, was president in 1897. Aside from his successful apiary, Mr. Darling was an extensive farmer, specializing in dairy cattle. I visited his home last winter and was very pleasantly entertained by Mrs. Darling and her son and two daughters.

The president in 1898, was Mr. M. B. Holmes, of Athens, who is still actively engaged in beekeeping and in association work. Being a director, Mr. Holmes is always at the annual meeting, and every year an apiary demonstration is held at his home, where the County Beekeepers' Association meets to spend an enjoyable afternoon. Mr. Holmes is peculiarly adapted to act as host on such occasions, being endowed with dry humor and a ready wit. He is a successful beekeeper, having his apiary in splendid condition, and is much respected by the beekeepers of his community.

Mr. W. J. Brown, of Chard, was president in 1899, and C. W. Post, of Trenton, in 1900. Mr. Post was at one time extensively engaged in migratory beekeeping, moving up the Trent river for basswood and down in Prince Edward county for buckwheat.

Mr. John Newton, of Thamesford, a pupil of the late J. B. Hall, was president in 1901. Mr. Newton has been director for his district for a number of years, also secretary of the Oxford County Beekeepers' Association, one of the oldest county associations in the province. He has a small bee supply business, specializing in comb foundation, in connection with his apiary. At the annual convention, Mr. Newton can always be depended upon to help in discussions and handle question drawers.

In 1902, Mr. J. D. Evans, of Islington, was president. A successful beekeeper and a genial friend, Mr. Evans has always been an out-spoken member of the association, never afraid to express his views even though they were radically opposed to the general opinion of the meeting. One of his pet schemes, has been that every beekeeper should be taxed on a per colony basis; the money thus collected being used for the purpose of controlling bee diseases. The idea has never been very favorably received by the majority of the members present, on the basis that we are usually taxed sufficiently without asking for more.

In 1903, Mr. W. A. Chrysler, of Chatham, was president. Mr. Chrysler is a sectional hive man and has for some time conducted a successful bee-supply business in connection with his apiaries. His son Ernest is now in partnership with him, and holds the position of director of the association for his district.

In 1904, Mr. J. W. Sparling, of Bowmanville, was president. Mr. Sparling was at one time an active exhibitor at Toronto, and closely associated with the organization. Of late years he has not appeared so much at beekeepers' meetings, and the last word I had from him, he was spending the winter in sunny California.

Another of our successful beekeepers, Mr. H. G. Sibbald, of Toronto, was president for 1905 and 1906. Keeping about 300 colonies in a rolling district about 30 miles from Toronto, Mr. Sibbald has reported some very good yields of clover honey. His returns have been sufficient to warrant his keeping up a home both in the city and in the country, spending only the summer months at his country home where his apiaries are located. He was one of the earliest automobile enthusiasts of the association, reporting some years ago the fact that we now know to be true, that a motor car would enable one to run an extra apiary sufficient to pay running expenses of the car and give the pleasure of motoring besides.

[To be continued].

AMERICAN
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA
BEE JOURNAL

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Dr. C C Miller, Associate Editor.
Frank C Pellett, Staff Correspondent.

IMPORTANT NOTICE.

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THE EDITOR'S VIEWPOINT

November Thoughts

It looks more and more probable that the high price of sweets will keep the price of honey within reasonable limits even though the eastern crop is larger than usual. So, friends, do not rush your product to market at low prices, although in the case of comb honey it is well to get rid of the bulk of it before the end of the holidays. Let the consumers know about it and find new outlets around you by local advertising.

PUTTING THE BEES IN WINTER QUARTERS.

Wherever the colonies are strong, it is well to fix them in their winter quarters before very cold weather, so as not to disturb them when the weather becomes very cold. Similarly, at the first cold spell the colonies that are to be put into the cellar should be brought in. They will fare better, according to the experience of all our old heads, if if they are placed in the cellar early than if they are kept out until a severe cold spell has them confined for some time to the hive.

The temperature required in a bee-cellar is variously estimated at from 35 to 50 degrees, with an average of between 40 and 45 degrees. The temperature at which they remain quietest is the right one. So use a thermometer in the cellar and judge for yourself what degree is the best, by the behavior of your colonies. Your thermometer may show a higher or lower degree, as the right one, than that of your neighbor, depending on its position in the cellar room, but the quietude of the bees is an infallible sign of proper conditions.

Weak colonies winter best in the cellar in most of our northern States.

Dairying and Vegetable Growing

The dairymen of Illinois planned to have a Dairy Day" on Oct. 7. Their organization pushed the matter to the point that they got the cooperation of the State Bankers' Association, the railroads of the State, and the State Dairy Commissioner. Result: A big dairy "Barbecue" at Litchfield, with many thousands in attendance and prominent speakers available Organization did it.

The Vegetable Growers' Association of America sent circular letters to all editors, announcing their meeting in Chicago in September. In connection with the meeting, a four-day course in growing under glass, control of insects, etc., was conducted. Gardening exhibits from six different colleges were shown.

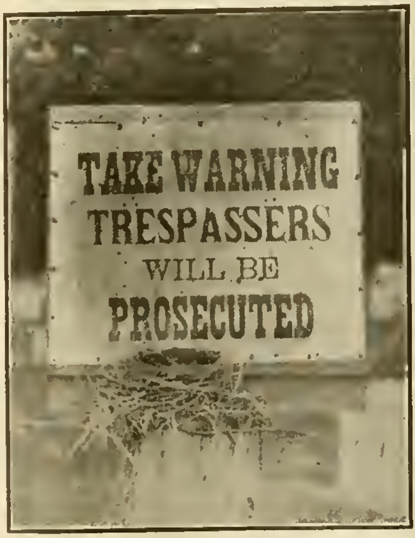


Fig 8.—A Robin Took Advantage of the Protection of a Warning Sign at the Bowen Outyard

Dairying and vegetable growing are certainly both more prominent than beekeeping, but the beekeepers must organize if they are to make their industry take the prominence it should.

Education in Beekeeping

A letter from Dr. A. C. Burrill, of Idaho, informs us that he has been invited to take charge of a new course in beekeeping at the University of Idaho.

At the University of Illinois only a a few students were registered in the beekeeping course in 1914. Last year more than 50 applied, so that an assistant to Prof. Folsom was necessary.

As our industry grows, so the demand for information is bound to grow in proportion.

Advertising Honey

Several letters have come in to us from consumers the last few days asking where they could obtain table honey. One or two of these letters were from large firms who found present connections insufficient or wanted to make a change. In every instance we refer such inquirers to our advertising pages.

If you have honey to sell or want to buy, a small advertisement should help you out.

A Bee Disease in Liguria

Our good friend, Engineer A. Capponi, of San Remo, Italy, writes in the September number of L'Apicoltore of a new bee disease, which he calls "tifo" (typhus). The beekeepers around him noticed in the fall of 1915, as he did himself, that the bees were dying in large numbers. Many powerful colonies were reduced to a few hundred bees. Many had to be united. The disease continued in the spring of 1916, so that his colonies in one apiary were reduced from 45 to 15. Another apiary of 20 was reduced to one. The only three swarms harvested deserted their hives and yet the season was good for honey, the strong colonies harvesting a good crop.

The readers who have followed the account of our trip in Europe in 1913, will remember that San Remo is located in the west part of Liguria, where the bees are of a mixed race, part Italian, part common.

The Editor of L'Apicoltore, Mr. Vincenzo Asprea, promises to investigate the disease in question. Perhaps it is similar to the Isle of Wight disease.

A New Miller Book

For more than 20 years Dr. Miller has conducted a Question and Answer Department in this Journal. The department has grown in popularity from year to year until it is no longer possible to answer all the questions through the Bee Journal. Some months we are compelled to delay half or more of the answers for lack of space.

In looking over the files for the past years we find that at some time Dr. Miller has answered questions relating to almost every conceivable angle of bee-culture. Maurice G. Dadant has been at work for some time sifting all this material to find the best answer given to every kind of question, and over a thousand of these questions with Dr. Miller's answers will be published in book form. We plan to use a number of illustrations to make the text clear, and believe that such a reference work will find a welcome among the Doctor's many admirers. This department has been continued so long that most of the answers now appearing are to questions that have been answered at some time in years past and some of them several times.

We do not intend to discontinue the department, but believe that the book will cover the entire field so fully that persons possessing it will be able to find the answer to almost any question that suggests itself. The questions coming to this department are at times so numerous as to make a heavy demand upon the Doctor's time. It seems desirable to save him from going over matter that he has already covered many times before.

Australasian Beekeeping

"Money in Bees in Australasia," is the title of a very practical treatise of 293 pages, now before us. The book is by the well-known Tarlton Rayment, whom our readers will remember as a contributor to the columns of the Bee Journal in September and December, 1915.

The book is on fine paper, well gotten up, with good illustrations, the most of which are original with the author. Perusing its pages convinces the reader that Rayment is not only a practical man, but a student who has read and tried most of the methods now in vogue in profitable beekeeping. We predict for it a ready sale in the Southern Hemisphere. The price is 7*s*. 6*d*., and the publishers are Whitcombe & Tombs, of Melbourne.

Shallow Supers

In Gleanings for Oct. 1, Mrs. Grace Allen writes that full-depth supers are too heavy for comfortable handling, but that she dislikes the shallow supers, which contain "not much more than half the weight."

Our own shallow supers are considerably larger than those used by the majority of beekeepers. The frames in them contain 92 square inches of comb as against 135 of the average full depth Langstroth frame, or a little over two-thirds of the contents of such a frame. As we use only 10 super frames over the top of an 11-frame hive, in a space of 16 inches, our super combs are also thicker than those of the full-depth frame. But there is no comparison in the ease of handling those shallow extracting supers. They are exactly of the proper width for a single stroke of the uncapping knife. That is why our uncapping is so expeditious. If Grace Allen were to try such shallow frames she could never agree to use the deep super again.

We have tried both the full-depth supers of the Langstroth pattern and our own shallow supers side by side in hundreds of colonies, and we could not think of ever going back to the full-depth supers.

DEATH OF PROF. COOK

Dr. Albert J. Cook, State Horticultural Commissioner, died at the home of his son in Owosso, Mich., after a long illness, on Sept. 29, aged 74 years.

Prof. Cook received his degree from the Michigan Agricultural College, with the entomological department of which he was connected for many years, during which time he was one of the leading apicultural inspectors and authorities of the country. His "Beekeepers' Guide," published in 1883, attained a large sale, and is still a standard text book.

In 1893 he accepted the Biological Professorship in Pomona College, since which time he has been less directly interested in apiculture. In 1911 he entered politics and was appointed California State Commissioner of Hortculture by Gov. Johnson, which office he still retained.

Prof. Cook was regarded as one of the foremost educational instructors of his day, his trend of thought being practical as well as scientific. He possessed the faculty of imparting information in an interesting manner, and was a popular lecturer as well as instructor.

He is survived by his widow, living in Claremont, Calif., and a son and brother of Owosso.—*Western Honey Bee.*

Honeydew

The interesting article and free translation of Prof. Heberle in this number will be read with interest. As a rule, the Swiss beekeepers ascribe the dark fir honey to an exudation. But in this country there is little doubt that the honeydew gathered mainly on the hickory, the oak, the basswood, etc., is a product of plant lice or aphides, often of the winged aphides. The writer disbelieved this theory until one day he saw honeydew on the upper surface of some dried leaves which were on the end of a limb, with nothing above them. It does not follow, however, that all honeydew is caused by plant lice, as the exudations of sweet juice have been proven by Bonnier.

THE LATE PROF. A. J. COOK—THIRTY YEARS AGO

AMONG EASTERN BEEKEEPERS

The First of a Series of Articles by the Editor on His Trip Through a Portion of the East

As announced on page 277 of our August number, I have again taken a trip among beekeepers, this time in the far east.

Dr. Burton N. Gates, of Amherst College of Agriculture, organized this tour by arranging nine field meets of beekeepers at such dates as would make it convenient for me. He promised to attend the greater number of them with me, and it is to him that I am mainly indebted for the great pleasure of this visit among eastern beekeepers.

E. G Carr in Working Garb.
(See the smile)

On July 31, after a railroad journey remarkable only by extremely hot weather, I reached Mt. Holly, N. J., where the smiling face of Mr. E. G. Carr greeted me on arrival. Our readers will remember that his photograph was published in the February number of the Bee Journal, page 45, among the people who are doing the work of Uncle Sam for beekeeping. But in that photograph he is exceedingly serious. You should see him smile to appreciate him. (See half-tone in this number.)

Mr. Carr is secretary of the New Jersey Beekeepers' Association and Inspector of bees for New Jersey. He is an active worker.

The first thing I did in landing at Mt. Holly was to look for the Mount. But I could see it nowhere. However, they pointed it to me, a little knoll a mile or two away, in a level plain. They say holly grows upon it. There are a dozen or more similar little humps in the southern half of New Jersey which otherwise would be as level as Illinois. But the northern portion makes up for the southern, since it contains a number of respectable mountains and among other celebrated natural wonders "The Palisades of the Hudson." Is that why they call it "The sharp backs State"?

New Jersey is renowned for its flora, and I learn that it has a more varied honey flow than any other State in the Union. Its principal honey crop comes from crimson, alsike and white clovers, all light in color. The fall flow, mainly from golden rod, with heartsease and asters, supplies a sufficiency for wintering.

The meeting of that day was held at the apiary of Mr. Harold Hornor, near the city, a nurseryman who keeps as neat an apiary as I have ever seen. Some 60 colonies were tiered four and five stories high. Mr. Hornor winters in two stories and requeens every year as soon as the clover crop is over.

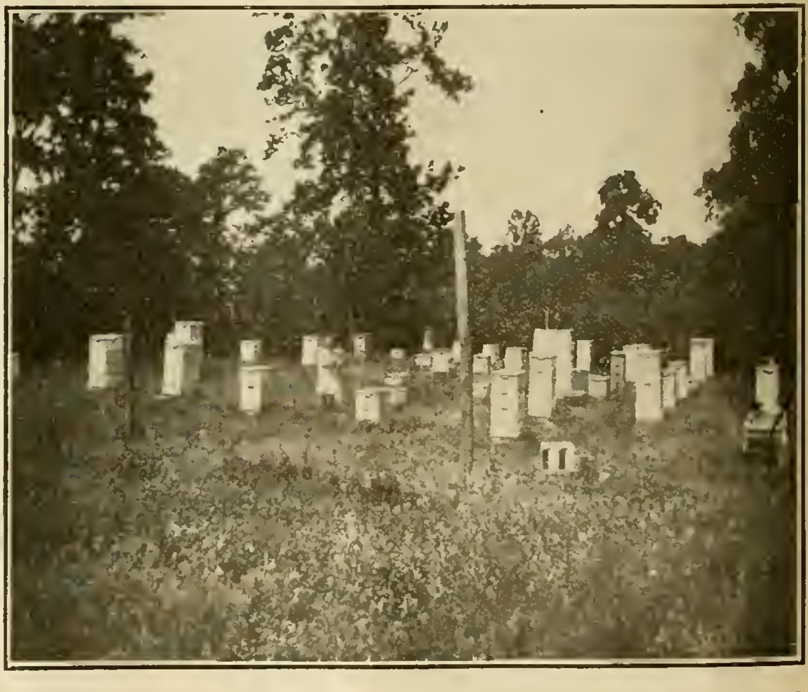
About 75 beekeepers were in attendance. The crop in general has been good and some anxiety was shown as to a possible lowering of prices. Yet, with the high price of sugar, it would be a mistake for the producers to become panic stricken.

The main subject discussed was European foulbrood. There is little if any American foulbrood, and the method recommended for the other disease is requeening with cells or young queens from pure stock, leaving the bees queenless at least five days.

Mr. R. D. Barclay, of Riverton, N. J., was the presiding officer at this meeting as well as at the meeting at Elizabeth the following day. He is a young man and a splendid president. Much of the success of a meeting depends upon its managers, the president and the secretary. The New Jersey beekeepers can congratulate themselves upon the choice they have made, in these two men.

That same evening I rode with Mr. Carr, in his machine (a Ford), to his home, about 20 miles distant, and the next morning early again to Trenton. There we took the train for Elizabeth, where a second meeting was held the first of August, at the hospitable home of Messrs. T. Edw. and Chr. Diener.

There are Some Box Hives Left in New Jersey



HOME APIARY OF STATE INSPECTOR E. G. CARR, AT NEW EGYPT, N. J.

In this small yard, located in the center of a city of 80,000 or more, we had an object lesson of the possibility of keeping bees without fear of stings. Over 75 persons were present, with many ladies and children and no one was stung, although people passed back and forth in front of the hives and a luncheon was served among them.

Dr. Headlee, State Entomologist, was present and spoke encouragingly of the prospect of beekeeping in New Jersey. There are but few large producers of honey in the State, but bees are profitable and are needed for the immense amount of domestic fruit blossoms to become fertilized. The fruit growers as well as the beekeepers realize their usefulness in this respect.

An interesting implement shown was a circular bee-escape, by C. D. Cheney, of Hoboken. This implement which allows the bees to issue forth in all directions might give a little more ventilation to the super than the standard pattern, but its cost would probably be greater.

The Diener method of watering bees deserves a mention. All beekeepers know that unless bees have an accustomed spot to get their supply of water at breeding time, they are likely to annoy neighbors at wells or cisterns. The Dieners have a city water pipe faucet dripping very slowly into a trough, and the water runs thence to a pile of rocks set on a hollow stone. This is sufficient to supply their bees with water and they do not annoy the neighbors, although in the heart of a city of 80,000.

Trough Showing Method of Watering Bees at the Diener Apiary
It keeps bees from neighbors water pumps

It is out of the question to mention all the nice people I met or all the questions discussed, but I must speak of Mr. H. C. White, a New York City attorney living in Plainfield, N. J., an apiarist and a member of the State Board of Conservation, who expressed his desire to help beekeeping in the State by all means in his power.

An acknowledgement is due to the Diener family for their generous entertainment of the members. They supplied a lunch for the 75 people present and looked after the comfort of all as if all were members of their family. Such hospitality is to be remembered.

Elizabeth is but 15 miles from New York City, and that same evening I was "at home" in a room on the 12th floor of a sky-scraper. Modern buildings have conveniences which would have been luxuries 50 years ago. A room with bath has become a necessity to the traveler, but it is in temperatures of 90 degrees or more that such a convenience is best appreciated. So is "ice water on tap" in the rooms, a still more modern accommodation.

I have no love for large cities. Seen from a distance they seem to be made of tall boxes on end and little boxes lying flat by the side of the tall ones, all with numerous breathing holes arranged in rows, which they call windows. When these huge piles of brick, stone and iron become heated, life in their interior can only be likened to life in a steam laundry, with bad air added. So with your leave, I will quit New York and go on to fresher scenes.

The only visits I made in New York before leaving, the next day, were to the well-known dealers in bee goods, J. H. M. Cook and I. J. Stringham, both busy in the busiest part of the metropolis.

I had received a hearty invitation from friend Allan Latham, of Norwichtown, Conn., to stop with him overnight previous to attending the Connecticut beekeepers' meeting which was to be held at Storrs on Aug. 3 and 4, and to which he expected to go in his automobile. All our readers know of Latham, as one of the liveliest, widest awake beekeepers in the United States. If you have forgotten what he is capable of sustaining in the way of forceful suggestions, look up his article on "Comb Honey by Parcel Post," in the March, 1914, number, or his testimonial to the usefulness of the yellow-jacket in the April, 1910, number of the American Bee Journal.

Harold Hornor of Mt. Holly, N. J., Beside a "Skyscraper."

Norwichtown is a suburb of Norwich, less than 15 miles from the Long Island Sound at New London. My way was by the sea shore, through Stamford, and I regretted to pass by without calling upon our old friend, L. C. Root, son-in-law of the veteran Moses Quinby and author of "Quinby's New Beekeeping." But I was later to have the opportunity, as will be shown.

I had wired Latham the hour of my arrival and he was at the train, with his two young sons. He did not have any auto, only a Ford, but with that faithful and hard-working little toy we were soon at his home. The first thing he did was to take me to the apiary, of course, but we were intercepted by Mrs. Latham, who came out of a side door and smilingly introduced herself to me, remarking at the same time that Mr. L. cared more for his bees than for his wife. Latham did not protest, how could he? The evidence was against him.

Mr. Latham is a lover of Nature and a student. He is almost as much of a crank on the study of bugs and plants as our co-worker Pellett, although I doubt whether he has ever gone as far

AT THE HORNOR APIARY, MT. HOLLY, N. J.,
The colonies were tiered three or four stories high

as rearing skunks and chicken-hawks for pets, as Pellett has done. We had a whole half day together the next morning and we went to one of his outyards, with his two boys. We roamed through the brush and for the first time in my life I went blueberry hunting. If Connecticut cannot boast of endless level fields like those of Illinois, it surely has a more delightful climate, for there is no such oppressive heat as in our plains and the wooded hillsides, pastures and stone fences reminded me forcibly of the scenes of my childhood in sunny France.

Here I first tasted pure sumac honey, for half a dozen varieties thrive in New England, and I saw more in the vicinity of Norwichtown than anywhere else. The honey is excellent and of a very pretty, pale, lemon color. I have nowhere seen honey of a similar shade. Sweet pepperbush (*Clethra alnifolia*), a pretty shrub growing naturally in a number of States, mainly along the coast, appears to be a plentiful honey producer, as bees are on its blossoms constantly. It is pretty enough to deserve a place in our yards, with the spireas, barberry, etc.

[To be continued.]

Honey Sources of Canada

F. W. L. SLADEN, DOMINION APIARIST.

ALSIKE and white clover are the principal honey plants of Canada, the clover honey region extending from coast to coast, but they fail more or less in the heart of the prairie country and in the dry belt of British Columbia. In many places alsike is as important as, if not more important than, white clover. This is especially true of the Great Lake region of Ontario, alsike being the principal source of honey in southern Ontario, where it is also cultivated for seed. In many parts of the Maritime Provinces white clover and alsike are usually abundant and very productive, but repeated freezing and thawing in winter and early spring kills the plants some years. As a source of surplus honey, these clovers are mainly confined to the farming sections, and they are extending every year as the land is cleared.

The principal commercial honey plant of the timber lands is fireweed (*Epilobium angustifolium*), which grows in abundance in moist and rich clearings, especially those that have been burned over. The fireweed becomes more common as one goes northward. Like clover, fireweed extends from coast to coast. It has a longer yielding period than clover, comes a little later and is not so badly affected by drouth, three important advantages, while the quality of the honey is very good, the color being even whiter than clover and the flavor mild. In many places raspberry is associated with the fireweed.

The alfalfa honey region extends into Canada in southern Alberta. It has not been much exploited yet. An average of about 130 pounds of honey per colony, spring count, mainly from alfalfa, has been obtained at the Dominion Experimental Farm, Lethbridge, during 1914-15. The region of paying crops of alfalfa honey probably extends westwards into the British Columbia dry belt.

The timber and scrub lands of the prairie possess a number of wild honey plants that are of commercial value collectively. The most important of these are the wolfberry (*Symphoricarpos occidentalis*), Canadian sainfoin (*Hedysarum boreale*), and the anise hyssop (*Agastache fœniculum*). Among the honey plants with a restricted range of production there is buckwheat in southern Ontario and southwestern Quebec, and also basswood with a similar but wider range extending into southeastern Manitoba. Both are uncertain yielders from year to year, but frequently important. Goldenrods and asters are of importance in the Maritime Provinces, of less value in the settled parts of Quebec, and improve again in northern Ontario and in Manitoba, east of Winnipeg. Two species of goldenrod, *Solidago puberula* and *S. squarrosa*, that grow abundantly on recently burned-over sandy plains in the watershed of the Gatineau Valley north of Ottawa have given good yields of light-colored honey at the end of August and during the first part of September. *Solidago uliginosa* and *Aster umbellatus* are important honey plants in the swamps in Charlotte county, New Brunswick, and in the Molson district of Manitoba.

A FEW OF THOSE PRESENT AT THE ELIZABETH, N. J., MEETING, AUG. 1.

MT. HOLLY, N. J., MEETING JULY 31, 1916
The tall white pillars are colonies of bees

The dogbane, *Apocynum androsæmifolium*, is one of the principal commercial honey plants in the Kootenays, B. C. Wild bergamot, *Monarda fistulosa*, and the gum weed, *Grindelia squarrosa*, have been reported as sources of honey in Manitoba. Among the introduced weeds, the wild radish, *Raphanus raphanistrum*, is evidently a source of a good deal of honey in the Annapolis

Valley, N. S. Canada thistle is a surplus producer in Manitoba and in the dry belt of northern Ontario and elsewhere, but it is probably unimportant.

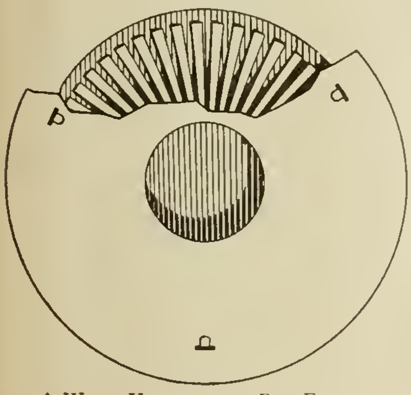
Willows supply pollen and nectar in April. Dandelion is abundant in many places and, if the weather is favorable, yields a surplus to strong colonies. At Ottawa the three strongest colonies in our apiary in the spring of 1914 had filled a super of shallow frames with dandelion honey by June 2. Apple bloom also yields surplus at this time if the weather is favorable in the Annapolis Valley, N. S., and other fruit growing districts. The two species of low blueberry in the east, *Vaccinium pennsylvanicum* and *V. canadense*, and the bearberry, *Arctostaphylos uva-ursi*, noticed at the Experimental Farm at Invermore, B. C., on May 17, 1915, are also of value in spring. A bungwort, *Mertensia paniculata*, is useful for building up in the spring, north and west of Lake Superior.

None of the eastern species of maple appear to be of first rate importance, but *Acer macrophyllum*, known as the broad-leaved or coast maple, is a valuable aid to breeding on the coast of British Columbia. On May 8, 1915, 200 pounds of honey, principally from this maple, were removed from 11 colonies at the Dominion Experimental Station, Agassiz, B. C.

Sweet clover, usually the white flowered species, *Melilotus alba*, is becoming plentiful in certain places in Quebec, Ontario, and the prairie and along the railways, but it does not, as a rule, yield heavily. The honey overpowers the delicate flavor of the clover honey, and bees that have been prepared for winter will wear themselves working on the flowers in August and September without adequate return.

Of ornamental trees and shrubs, two deserve notice. European limes, *Tilia europea*, planted for shade in the city of Charlottetown, P. E. I., were contributing to the filling of supers at our Experimental Farm there on Aug. 3, 1914, a month later than they would be in bloom in England, and the Siberian pea tree, *Caragana arborescens*, was found to be the chief source of nectar that was gathered rapidly at the Experimental Farm at Indian Head, Sask., on May 31, 1915, where hedges which are now about 20 feet high had been planted around several fields some years ago.

The following is a list of some of the less important honey plants: Snowberry (*Symphoricarpos racemosus*) west of the Kootenays, B. C.; milkweed (*Asclepias*); boneset (*Eupatorium perfoliatum*), New Brunswick to Ontario; viper's bugloss (*Echium vulgare*), Ontario; buckthorn, sumac, Ontario; button-bush, S. Ontario; blackberry, smartweed, catnip, motherwort, hound's tongue (*Cynoglossum*), Ontario; blue vervain.



A Well Ventilated Bee-Escape
C. D. Cheney

Canada with its long and warm summer days and well-distributed rainfall, and abundant bloom throughout the season, beginning in April when, it may be in heat and brilliant sunshine, the snow rapidly melts away and the willows burst into bloom, and continuing until in early September, the east and north are aglow with goldenrod and aster, is a fine country for the beekeeper. Over a large area the season is as long or longer than in many places to the southward, July being the month for clover yield and August for the fireweed.

American Foulbrood

BY J. L. BYER.

WHILE there is considerable dfference in opinion as to the best methods of treating European foulbrood, nearly all are quite decided that the so-called McEvoy method, or a modification of the same, is the only way of dealing with American foulbrood. In this connection it is only fair, in behalf of the late Mr McEvoy, to state that he *always* insisted that two shakes instead of one be given. The latter method is more often advised in the United States than the former. I have at different times asked Mr. McEvoy if he did not think it as well to give but the one shake and run the risk of a small percentage being found diseased again, but he always emphatically answered "no," as in his experience the percentage that would show up with disease again was too large. This being the case, any one attempting to cure foulbrood, by simply taking away the brood-combs and shaking the bees on to foundation, should not by any means call it the McEvoy plan, for if Mr. McEvoy were alive he would be the first to resent it.

The inspectors in Ontario have no license to use the single shaking plan, and I have heard of none advising that method. Even if the experienced beekeeper did practice the plan with success, watching carefully for disease to reappear in treated colonies, the fact that inspectors deal with all kinds of people, many of whom would "take a whole hand if you offered them a

SWEET PEPPERBUSH (*Clethra alnifolia*) GROWING IN ALLAN LATHAM S YARD

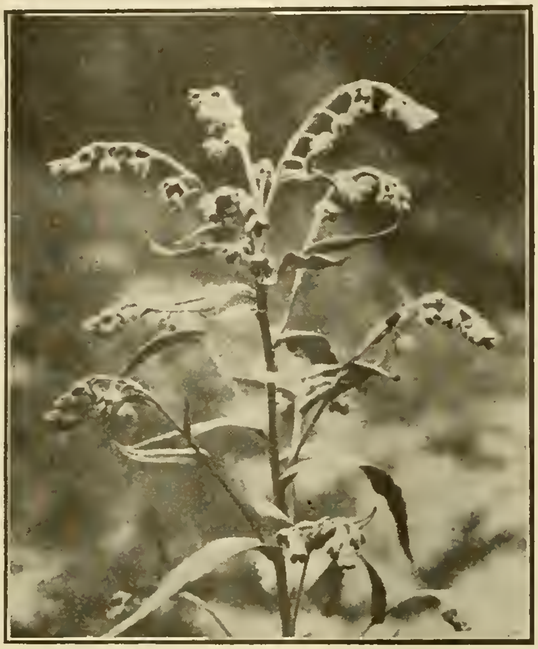


FIG. 91.—HOUND'S TONGUE—Photographed in the woods

thumb," makes it imperative in the minds of our authorities that no half way measures should be tolerated in dealing with such a serious disease. If giving but one shake would cure all but a few, one could afford to treat those few colonies again, for a second shaking often seems to demoralize colonies, causing many to desert the hives if queens are not caged. Those who have practiced much shaking of foulbrood know of the amount of trouble often attendant with the second shaking when the partly drawn starters are replaced by full sheets of foundation.

While we have never had much foulbrood in our apiaries—six colonies at one yard five or six years ago being the largest number found in a single season—yet as I practiced the single shake in nearly every case, results as to how they turned out might be interesting. During the last eight years I have treated 17 or 18 colonies, nearly all mildly affected, as I always found them in the spring when clipping queens and doing the general manipulating incidental to spring work. Of this number five or six showed a few cells of foulbrood later, and had to be shaken again. This is altogether too large a percentage, and if this is a general condition resulting from giving but one shake, I understand why Mr. McEvoy emphatically insisted on two shakes, and I wonder that so many inspectors "over the line" advocate giving but one shake.

Results are often hard to explain, and I might illustrate this by telling of two incidents coming under my notice. Some years ago when on inspection work I was looking through some very strong colonies belonging to a friend not far from my home, a distance of seven or eight miles. The colonies were given little attention by the owner, but the bees, although in odd-sized hives, were abnormally strong.

On examination, six of those very strong colonies were found mildly diseased with American foulbrood; evidently they had been robbing somewhere quite recently, as no dried scales were to be seen. My friend said he would not treat the bees, and that if I would not take them away he would burn them, hives and all. I tried to persuade him to treat them, but to no effect, and later he sent word for me to come and take them away or he would burn up the whole outfit. Reluctantly I decided to drive over and bring the six colonies home and treat them, as it seemed too bad to destroy such strong colonies.

Of course, as an inspector I could not think of buying the bees, and it was hardly the thing for me to take them away even if my friend was so insistent. However, laying aside the ethics of the case, the six colonies were brought home and placed about 100 feet away from the other bees, under some apple trees. They were given but one shake, yet not a cell of foulbrood ever reappeared, although a careful watch was kept on those hives ever since. There had been a very heavy flow during the day on which the bees were treated and for a few days following. Last spring we found two cases of foulbrood, one at the Altona yard and one at the home yard. Both were given the single shake at the opening of the clover flow. After the shaking we had three days of rain that kept the bees in the hives. I thought surely there would be a cure, for the bees were getting nothing and would have to use up the honey taken with them that might possibly be diseased.

Later in the season I found both colonies showing a few cells of foulbrood. I can offer no explanation, and

FIG. 92.—PROF. PETTIT AMONG THE WILD RASPBERRY IN ONTARIO

can only say that each year I am getting to be more of the opinion that it would pay us to always give the two shakes.

Markham, Ont.

No. 22.—The Honey-Producing Plants

BY FRANK C. PELLETT.

(*Photographs by the author.*)

ALL three of the pictures illustrating this article were taken by the writer during his recent visit to Ontario. Figure 91, the first one shown is the common hound's tongue, *Cynoglossum officinale*, a weed introduced from Europe. It is named from the shape and texture of the leaf. The writer had not previously met with this plant, although it is recorded as of rather infrequent occurrence in some parts of Iowa. It was referred to as a good honey plant on several occasions during the stay in the province, but no definite information as to the extent of its value or the quality of the honey yielded could be obtained. The specimen shown in the picture was growing in the woods near Guelph. It was also found growing in open fields. Memoir 54 of the Canadian Geographical Survey gives its habitat as "open ground near dwellings, cultivated fields and open woods." The plant seems to be more abundant in the north from New England to Quebec and Ontario, although it is sometimes found as far south as Alabama and Georgia and is recorded as far west as Kansas. It is said to be common throughout the State of Maryland in "dry forests and waste situations." The writer will welcome correspondence from beekeepers who can give information in regard to the quality of honey stored from this source or whether it ever secretes nectar in sufficient abundance to be of special value.

WILD RASPBERRY.

The wild black raspberry, *Rubus occidentalis*, is a very common plant in the woods of the northeastern States. Mohr gives its natural range as New England to Quebec and Ontario, Minnesota, Nebraska, Colorado and Oregon, south to Ohio and West Virginia, and along the mountains of Georgia."

There are several species of wild raspberries, but probably all are good honey producers. Raspberry honey is produced extensively in northern Michigan where the plant is abundant on cut over lands. It blooms following the tree fruits and is usually ahead of the white clover. In localities where it is plentiful it is a most valuable honey plant and phenomenal yields have sometimes been reported from this source. A good raspberry location is very desirable. Beekeepers who chance to be near large plantations of raspberries cultivated for market are equally fortunate. The honey is said to be white and of a superior quality. Figure 92 shows a luxuriant growth of wild raspberry as it is found in many localities in Ontario.

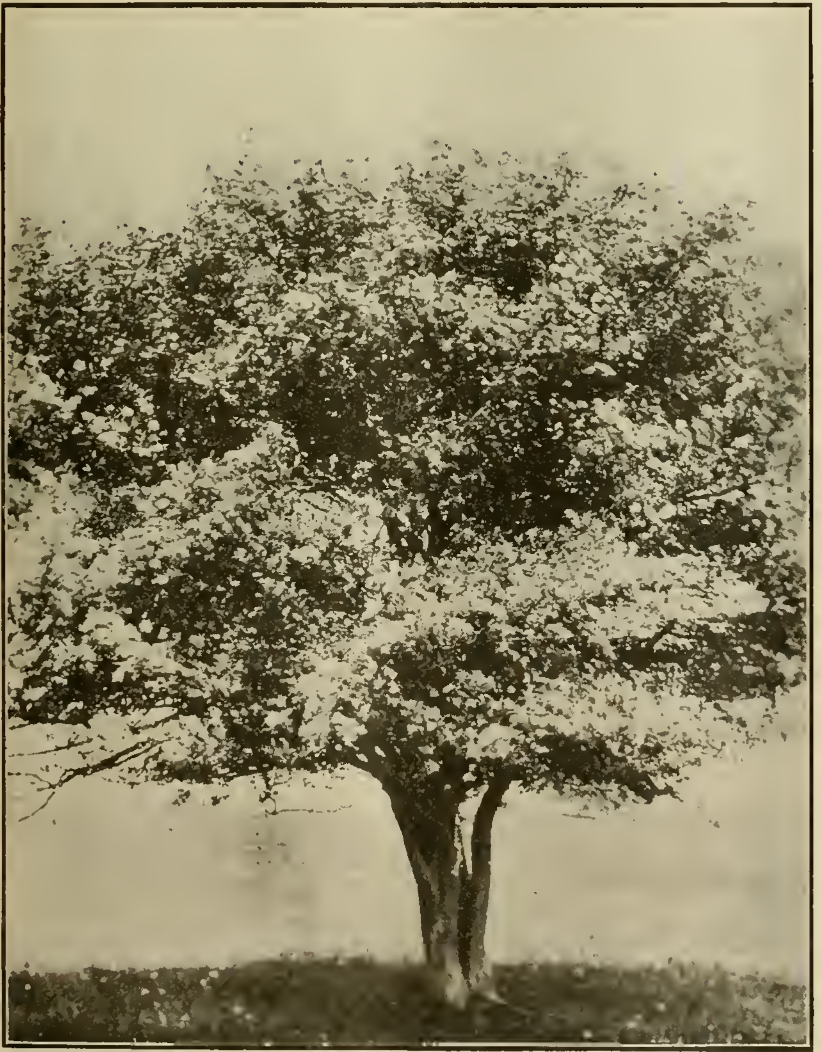


FIG. 93.—A HAWTHORN TREE IN BLOOM

HAWTHORN.

Figure 93 pictures a hawthorn tree in full bloom. The picture does not do justice to the masses of white flowers with which the tree was covered. This is an eastern species, *Cratægus punctata*, which occurs from Quebec to Ontario and south to Georgia. It was about the middle of June when this picture was taken and the bees were working on these trees everywhere we went. Clover had not begun to yield to any extent and the thorn was a great boost to the bees wherever it was plentiful.

There are many different species of hawthorn, or haw, some of which occur in Europe and Asia as well as in North America. On this continent some species are common from Canada to Mexico and west to the treeless plains. Scholl reports the white thorn, *Cratægus spathulata*, as valuable for both honey and pollen in Texas, where it blooms in April. There are about 25 species of these trees within the United States, and all may be regarded as valuable sources of honey where they are sufficiently plentiful. In general they may be regarded as similar to the tree fruits in quality and quantity of nectar. Five species are known to occur in Ontario.

Atlantic, Iowa.

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Beekeeping in Ontario

BY GEORGE F. KINGSMILL.

ELSEWHERE in this number appears an article dealing with some of Ontario's most prominent beekeepers. Space permits mentioning the names of but few, yet there are many beekeepers in Ontario having honey production as their chief means of support. Hundreds of others keep bees as a sideline, and many others have their colonies for their hobbies. It is concerning the hundreds of farmer beekeepers, with honey as a sideline, that I want to write especially.

Their apiaries are dotted all over the province, from the most southern part of Essex to the waters of James Bay some hundreds of miles north, and from the eastern counties Glengarry and Stormont to the western boundary, a few hundred miles west.

Practically all parts of the province have suitable acreages for bee-pasturage, some of which are, of course, much better than others. Especially does the new clay belt in the north seem like a beekeepers' paradise. One of the former inspectors for foulbrood, Mr. Wm. Agar, has located there, and while he has only had bees in this new territory for the past two seasons, his crops are startling to the beekeepers of the more settled districts. The effects of the timber fires and slashing have yet to be seen, but present indications are that this will be a grand bee county when developed.

Like every other part of the globe, the beekeepers are from all walks in life — doctors, lawyers, merchants, preachers, teachers, farmers, bankers, printers, etc Some are more extensively interested than others, but all are finding it a pleasant and profitable undertaking. The greater numbers of the beekeepers are farmers having bees as a sideline. While some are looking to this sideline as a means of employment for members of their growing families, others regard the bees as a hit or miss proposition that sometimes pays and at other times only holds its own.

Centers for beekeeping have sprung up in different parts of the province. The former so-called apicultural schools, conducted by prominent extensive beekeepers, gave men a practical insight into the business, and no doubt tended to increase the beekeepers in their neighborhoods Others saw that bees could be kept profitably and entered the business, and in this way beekeeping grew in centers. In many cases the growth overcrowded the district, and the overstocking resulted in smaller averages both to the extensive, as well as the small beekeepers. The smaller men in some cases became discouraged and soon dropped beekeeping, while in other cases the congestion was relieved by the larger beekeeper moving to new territory. Such centers were established around Woodstock, London, Trenton, and in the extremely eastern parts of the province.

The Provincial Department of Agriculture annually compiles a spring report of beekeeping conditions. The report of 1916, taken from 800 replies, showed 30 colonies per apiary to be the average. The 800 beekeepers reported have 574 extractors of which no less than 21 were power machines, 201 2-frame and 178 were 4 frame extractors. Undoubtedly some of those reporting produce comb honey exclusively, and hence have no extractor. If a census were taken of the extractors in use at present, a far greater number would likely be shown, as many beekeepers have purchased this past summer to handle the heavy crop.

The use of the motor car in apiary work is steadily increasing, and especially with the specialist beekeepers is it being successfully employed. Large trucks are sometimes used, but generally the lighter cars are preferred. In some cases the rear seat is replaced by a rack for the load, while in others a trailer is attached and the car is used only for its locomotion. Sixteen cars were in use last spring—many more will be used next season.

A crop report taken by the Ontario Beekeepers' Association gave the average yield of light honey per colony to be 89 6 pounds. This, of course, has been a very good season, yet the average is only about 30 pounds higher than last year's average. It is estimated that there are at least 10,000 beekeepers in Ontario keeping an average of 30 colonies each, or a grand total of 300,000 colonies. With this year's average of 89 6 pounds per colony, 25 880 000 pounds or 12,940 tons were gathered by the bees. It would take between 8 and 9 trains of between 50 and 60 cars each to carry this crop to market if it were all marketed. Large quantities are used for home consumption, and only occasionally is any one market overloaded.

Guelph, Ont.

Porto Rico and Its Beekeepers

BY HENRY BRENNER.

I ARRIVED in San Juan, Porto Rico, in February, and had the good fortune, in a few days after landing, to form the acquaintance of Mr. Elton Warner. Mr. Warner is, to my knowledge, the largest beekeeper on the island. He is a progressive and up-to-date apiarist as his well kept apiaries bear witness. They are all in first-class condition and fitted out with every modern convenience and improvement. They are situated on good automobile roads and each contains from 200 to 500 colonies of bees, a honey and extracting house and a comfortable dwelling for the apiary manager.

Through the kindness of Mr. Warner I became acquainted with Mr. M. K. Fletcher, of La Isabella Grove, one of the largest citrus fruit plantations in Porto Rico. The bees at La Isabella are managed by Mr. Warner's men. While I was there, however, Mr. Walter Fletcher, Jr., established another large apiary of his own upon a part of the plantation. I have had a letter recently from him and he advises that this new apiary has done well even in its initial year. I shall never forget the pleasant time spent at Mr. Fletcher's hospitable home. He and his good lady have a way to make a guest feel that he is really welcome.

Means of Transporting Sugar Cane on the Island of Porto Rico

La Isabella has its own electric plant for lights, power, etc. It has a well equipped machine and blacksmith shop, warehouses, packing sheds, messrooms and kitchens for the employees, a commissary store, and even a rail track through the entire plantation for the hauling of the fruit. I was surprised at the large number of employees and the friendly spirit prevailing between the management and the laborers.

During the great strike on the north coast in the sugar and citrus fields, all the hands on the Fletcher plantations stayed with him. There was no trouble, no cessation of work at La Isabella.

On the north coast I have also to thank Mr. F. E. Hartwell and the German Consul, Mr. Hepp, who contributed to make my stay pleasant. I visited apiaries in about ten different places and twice had the pleasure of taking a 15-mile horseback trip. Once I had the unique experience of a 12-mile "hike" on foot along the beautiful country roads into some of the less frequented places. At Naranjito I met Mr. J. M. McCall, the owner of a large and prosperous cigar manufactory with a branch distributing house in New York. He is deeply interested in apiculture and I received a kind letter from him since my return home, urging me to make his home my headquarters when I visit the island again.

Along the coast runs the Porto Rico railroad, and there are also two regular automobile lines across the island from north to south. This latter way I used in going to Ponce.

At Ponce I met Senor Rudolfo del Valle, an enthusiastic beekeeper and an old friend of the American Bee Journal and of its editor. When Don Rudolfo learned that I was stopping at a hotel in Ponce he came at once and took me to his town residence where his lady and family joined in making me feel at home. That evening we went to his country home outside of Ponce. I was surprised to find in Porto Rico, which some of us have pictured as a far off island possession, a dwelling with all the modern comforts. Here was a complete system of water works, an electric light plant and such a garden as only the tropics can produce.

Through Don Rudolfo's kindness I met Senor Don Rafael Serra at the coffee plantation, Bureness-in-the-Hills, which became my home while on the south coast. Senor Serra is one of the most learned and versatile men it has ever been my pleasure to meet. He can talk as interestingly of the life of ancient Egypt, 1000 years B C., as if he had personally enjoyed its splendor. He is as conversant with the activities of mediæval Greece and Rome as he is with modern history and literature. My dearest memories of the island are the long evenings we spent in discussing astronomy and ancient philosophy while at his hacienda. During my stay Don Rafael started an apiary, and I am glad to learn from recent letters that it is prospering.

Here again I was astonished at the labor conditions. I found a small army of employees, each family in a nice clean house and every one happy and contented. Every soul on the plantation seemed to be always in good humor At this hacienda everything is Spanish. There are no American employees. There is a patriarchal condition between Senor Serra and every soul on the place. If a laborer or any member of his family gets hurt or sick he finds medicine and help. They apply at once to Don Rafael in case of any need or whenever in any difficulty. The majordomo and the overseers I found to be very intelligent men. They were born and educated on the hacienda.

The Porto Rican honey that I have seen is rather dark in color but of fine flavor. The war conditions have kept this honey from its regular market and it is now being sent to New York where the price is very low. Some of the larger apiarists claim that they are finding it more profitable to raise wax until times and markets become normal again.

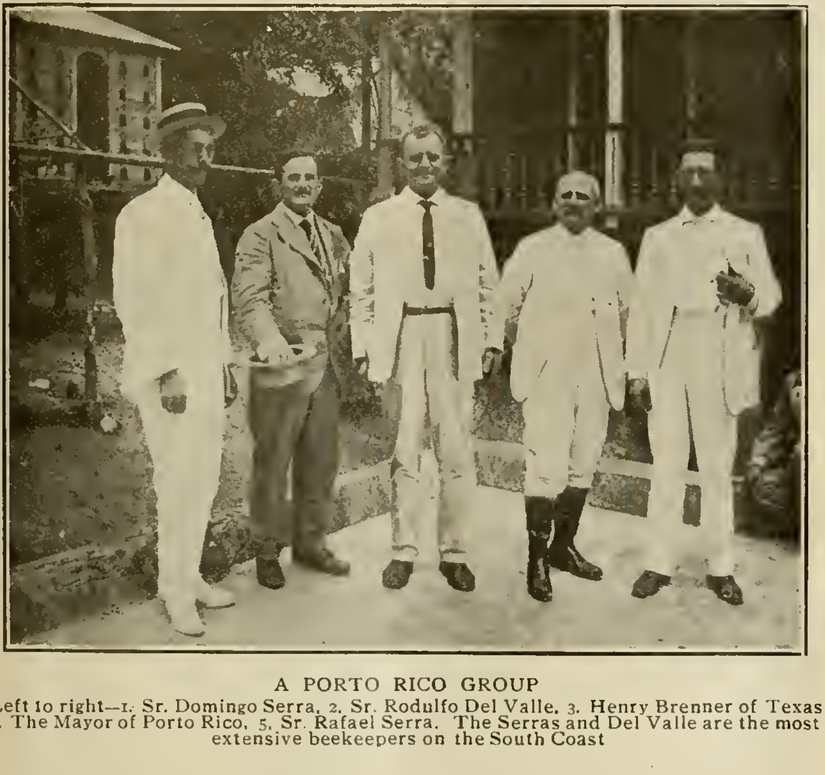
Among the citrus fruit plantations nectar comes in from this source and from the trees and shrubs which are planted for windbreaks to protect the orchards from the hurricanes. At the coffee plantations the main source of nectar is from the shade trees planted to protect the coffee plants. Tobacco also yields a heavy flow under certain conditions. These are the main sources pointed out to me, but I also saw dozens of other shrubs and plants upon which the bees were working.

The intelligence of the native apiary managers is remarkable. They are anxious to learn and adopt new methods. It was a pleasure to me to instruct these bright, eager men in queen-rearing, introducing, swarm control, wax production, etc., as we practice them in Texas.

Very important business called me home in June and I did not have the pleasure of meeting several other beekeepers who had invited me by letter to spend a portion of my time with them, and I shall certainly look them up when I return next winter.

It would take too much space, and a bee journal is perhaps not a proper place, or I would tell the readers something more of the wonders of the tropics, the waterfalls, the mountain scenery, grottoes, subterranean passages of volcanic origin passing through beneath the mountains; of the hotels and the life in the towns. I found the most interesting things and the genuinely typical conditions far away from the regular tourist route. When the apiary hands found that I was interested in the natural phenomena in the flora and the fauna of the island, they were willing to show me new sights and wonders in exchange for the little help and hints I gave them in improving their methods of apiculture.

Seguin, Tex.



A PORTO RICO GROUP

Left to right—1. Sr. Domingo Serra, 2. Sr. Rodulfo Del Valle. 3. Henry Brenner of Texas 4. The Mayor of Porto Rico, 5. Sr. Rafael Serra. The Serras and Del Valle are the most extensive beekeepers on the South Coast

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Honeydew—Its Origin

BY J. A. HEBERLE, B.S.

A free condensed translation of a lecture of Jule Frei, Sehw. Bztg.

OPINIONS as to the origin of honeydew differ even today. It was a long time before men of science began to investigate the question. Pliny mentions honeydew and was of the opinion that it dropped as gentle dew from heaven. For centuries this was the general belief. The English and German name seems in accordance with this belief. About the middle of the 16th century it was noticed that honeydew is very unequally distributed in the same locality. Some plants and trees are completely covered, while trees near by show no trace of it, while if it fell from heaven all the plants and their immediate surroundings would be covered with honey-dew.

In the year 1742 the Swedish Academy offered a prize for the solution because Reaumur had noticed that aphides and honeydew occurred together on the same plants. In Switzerland about 40 percent of the honey crop is from honeydew, principally from the weisstanne (*Pinus abies*) a fir tree. From this fir tree the beekeepers in the Vosges mountains, the black forest and in parts of Switzerland, harvest large crops of honeydew, also called waldhonig. Notwithstanding its greenish-black color it is much esteemed by the population.

[From all I have heard and read (personally I have had no opportunity to make observations) about this waldhonig, the evidence points to plant origin, especially since the meteorological conditions seem of paramount importance, while the aphides surely are not quite so sensitive as to flourish only under special climatic conditions.—H.]

Mr. Frei considers all honeys which are collected by the bees outside of blossoms and flowers, on various parts of the plants, as honeydew honey. He frankly admits that there are two kinds, one of purely vegetable and one of animal origin. In Switzerland, the lecturer said, they have almost exclusively honeydew of vegetable origin, produced by peculiar climatic conditions.

Toward the end of the last century and only the last few years has the question of the origin of honeydew been settled in favor of those who consider it of vegetable origin.

The following observations have had a determining influence in deciding the question:

We know from observation that honeydew comes very irregularly and then suddenly, over night and sometimes in such profusion that it can for that reason not exclusively be produced by aphides. These could not in so short a time multiply to such enormous numbers necessary for such a result. Then, again, honeydew usually disappears as promptly as it came, when the weather suddenly changes.

The appearance of honeydew depends principally on the weather which may cause a rapid movement of plant juice toward the leaves; light and heat and reduced evaporation may cause such a tension that considerable quantities of the sweet juice exude.

It is a fact that where honeydew is, aphides are often present, but this presence is not the cause of the honeyflow, but is an accompanying circumstance. If the great tension of the sweet juice has set in, the excess must exude, no matter whether aphides are present or not.

In fact, several scientists have pointed out that especially by the fir, beech and alder they have, notwithstanding a careful search, been unable to find aphides in numbers sufficient to account for the liberal quantity of honeydew. The aphides could not disappear by moving when the honeydew was still present. Where a considerable number of aphides are found their presence is easily explained by their preference for juicy, succulent young growth.

Honeydew, *i. e.*, the sweet plant juice, shows in its composition a surprising resemblance to the nectar of blossoms. Mr. Frei said the main opposition to the acceptance of honeydew as of vegetable origin is from Buesgen, Botanst, at the University of Jena. He considers, with the exception of ergot, honey-dew of animal origin, of aphides and scales.

During a period of drouth the product of the aphides on the upper side of the leaves dries up. Since this sweet stuff is readily soluble, dew and moisture from the air cause it to swell, so often in the early morn after a cool night we have honeydew. This may even happen after the aphides have disappeared. The absence of aphides at the time of the appearance of honeydew would therefore be no proof of its vegetable origin.

After having given the above as Buesgen's view, Frei says: Should honeydew be of animal origin as above indicated, then after a heavy rain the bees could find no honeydew, it would all have been washed away until a further accumulation had taken place. Experience shows that this is not always the case. The bees gathered from the firs in 1911, on the southern part of the Jura between Biel and Brugg, unusual quantities of honeydew honey notwithstanding the numerous heavy rains. Further, the fir harbors very few animal parasites, and the aphides and scales practically disappear about the middle of August (in Switzerland). From where can be the honeydew honey that is gathered sometimes in September, if it is not produced by the plant itself?

Buesgen says: "The minute drops of honeydew are never seen to grow, which would be observed if the plant itself produced it." Frei cites the Pfaelzer Bztg., which writes in reference to the above remark: "To observe the growing of the honeydew, *f. i.*, on the fir one must be on the watch before sunrise, then one may in the twilight see in the axis of the young shoots very minute shining drops of a sweet but slightly resinous taste. As the sun rises higher these minute drops will swell and finally begin to flow."

Mr. Forer (Schw. Bztz., 1893) observed on the needles of the firs aphides of one millimeter in length with the heads toward the base of the needles.

Dr. Brandes confirms this and holds honeydew on the firs as the practically undigested juice of fir needles which the aphides have imbibed and which they flip from the end of the abdomen some little distance in little crystalline balls of about one millimeter diameter.

This, Frei says, has been repeatedly observed. He himself has observed this a few days in 1914, only a few yards from his apiary, but his bees brought no honey.

Dr. Soraner, University of Berlin, says in his work: Plant Diseases, 1909. "My own observations confirm the existence of honeydew without the intervention of aphides."

Burkhard Wuert, Bienenpflege says: "We can in some years see the shining spots from the aphides on leaves and plants without getting a drop of honey."

Dr. Heinis-Basel told Mr. Frei that he had repeatedly seen honeydew on hot-house plants which were free from aphides.

The French naturalist Bonnier has succeeded in producing honeydew on leaves and plants by artificially changing the temperature and could under the microscope see the exudation of the sweet juice on the underside of the leaf.

Baron von Berlepsch says in his classic work, Die Biene and ihre Zucht: "It would be difficult to understand why or how some people doubt that honeydew may occur without the intervention of aphides, did we not know the power of preconceived opinion and that many people lack the power of observation when honeydew occurs. One need only observe the upper side of leaves that are turned up to the free air (heaven), and notice that this side is also covered with honeydew.

Unger has shown before the Academy of Vienna, that honeydew may occur independent of aphides.

The honeydew of the fir furnishes some years very good crops. One beekeeper published the best day's increase of a hive on scales:

June 29, 1893, 9.4 kilogramm.
June 29, 1894, 5 5 "
July 3, 1897, 4.5 "
July 10, 1911, 4.2 "
July 1, 1914, 4.5 "

I have seen a record of one colony producing 385 pounds in 1900. In 1915 a friend of mine had an average of 90 pounds of waldhonig; the best colony produced 180 pounds.

This is not all the evidence in favor of honeydew being of vegetable origin. It seems that the fir tree is almost exclusively considered. Opinions still differ as to the origin of honeydew, but there is no doubt that the honey from it, as winter stores in our climate, produces diarrhea with records of great losses, up to 50 percent and even more when not removed and sugar fed to replace it.

Kempten, Bavaria, Germany.

Work of Provincial Apiarist

In none of our States, except Massachusetts, are all departments of the beekeeping work under the direction of one head, as in the Canadian Province of Ontario. Minnesota makes equal provision for the work, but it is divided between two departments, one having the educational work in charge while the inspection work is entirely separate. In Ontario the beekeeping work is better provided for and more fully organized than in any other Canadian province.

Prof. Morley Pettit, the provincial apiarist, is a practical beekeeper of many years experience, so that his teaching is made practical, as a matter of course. The writer has had the privilege of visiting the college on two occasions, once during a winter short course and again during the summer session. Aside from the teaching work carried on in the school and which directly affects every student registered in the agricultural courses, extension work in beekeeping is done on a scale not attempted elsewhere as far as the writer is able to learn. The department mailing list includes the names of more than 7000 beekeepers in the province, and each of them receives a circular letter of timely interest several times during the year.

The beekeepers are informed as to the crops harvested and probable prices which may be obtained, the time and place of holding beekeepers' meetings, the winter losses and many other matters of vital interest to the practical beekeeper. Extensive correspondence is carried on answering the many ques-

THE STAFF AT ONTARIO AGRICULTURAL COLLEGE AT GUELPH
Top row—Joseph Roberts, Geo. F. Kingsmill, Stanley A. Stewart. Lower row—Miss C. Koch, Prof. Morley Pettit, and Miss Grace Hamilton

tions asked by those who have met with perplexing situations which they are unable to handle successfully or the solving of the beginners' problems. Bulletins and reports which deal with beekeeping especially under Ontario conditions are sent out from time to time. The reader of general literature must make due allowances for differences in location, climate, flora, etc. The greatest value of the local bulletins lies in the fact that they apply to the exact conditions of the people among whom they are distributed. This extension work on the part of the college is largely responsible for the fact that the Ontario Beekeepers' Association has the largest membership of any like organization on the American continent, and that the beekeepers average high in their production.

REGULAR COURSES.

The work given to students in Ontario is unlike that of most colleges in that all students must take the beekeeping work during their first years, regardless of which course they are taking. During the last part of the course the student is permitted to follow his specialty to the exclusion of other lines. Under this plan the graduate will have a much broader agricultural education than would be possible if he were permitted to confine his attention to the narrow field of a specialty from the first. Although but few of these general students will take up beekeeping seriously after leaving school, they will have a much better idea of the business, and beekeepers will receive more favorable attention in localities where men with such training reside.

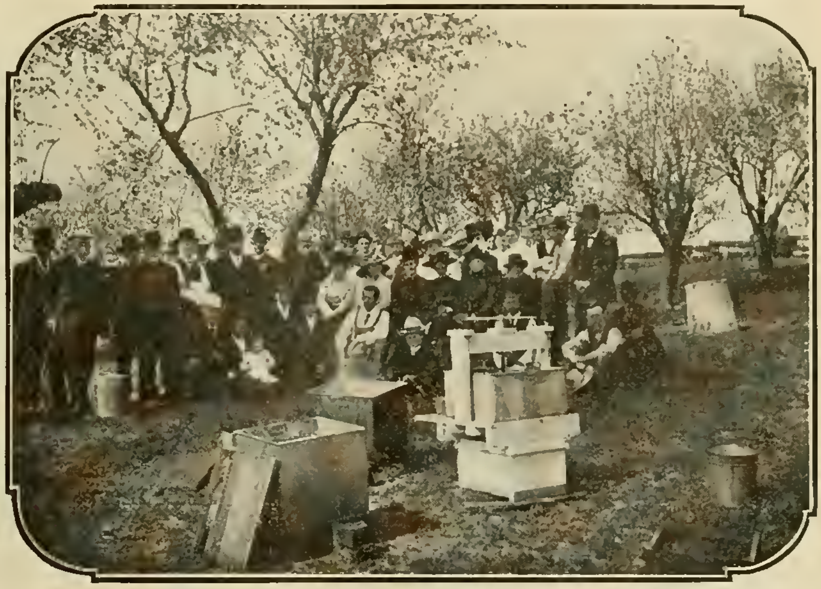
Beside the regular four year college courses, there are short courses given both summer and winter which are designed to give the student a good general idea of the fundamentals of beekeeping. Beginners who attend these courses are able to read the general literature with much better understanding and make fewer blunders in their operations.

In addition to these courses held at the college, local short courses are sometimes given where the interest justifies. The local short course takes the work to the student's home and is in line with the extension work in general farming now generally provided for in most of the States.

At the college apiary various experiments are carried on. Such practical matters as wintering, swarm control, etc., are under investigation. Various cooperative experiments are carried on under direction of the college, many beekeepers in various parts of the province working on the same problem at the same time and all reporting the results at the end of the season. As many as 400 cooperate in this work.

The library of beekeeping is very complete, containing files of most of the existing bee journals printed in the English language, as well as current books and those which have long been out of print. There is an extensive card index which enables one to locate most that has been written on any subject relating to bee-culture.

Our picture shows Mr. Pettit and his assistants. Of these Mr. Stanley Stewart is a special inspector and has charge of the mechanical work of the department. Mr. Joseph Roberts is apiary assistant and photographer. Mr. Geo. F. Kingsmill is assistant in charge of apiary demonstrations and assists also with lectures and experimental work. Miss Koch is department stenographer and bookkeeper, while Miss Hamilton has charge of the filing of records, correspondence, etc.


A DEMONSTRATION IN WAX RENDERING AT THE ONTARIO COLLEGE

A GROUP OF STUDENTS AT THE ONTARIO SHORT COURSE

Prof. F. E. Millen who now has charge of the beekeeping work in the Michigan State University, Mr. Kingsmill who is assistant professor with Mr. Pettit, and E. M. Aitkins who is assistant to the Dominion Apiarist at Ottawa, are among the early graduates of the department.

INSPECTION WORK.

There are 20 inspectors in the province appointed by the Lieutenant-Governor on recommendation of the minister of agriculture. Each inspector has from one to three counties, which is plenty for one man to cover thoroughly. Mr. James Armstrong is chief inspector and assists Mr. Pettit during short courses, etc., by giving instruction in the detection and treatment of disease. While the provincial apiarist is not responsible for the appointment of the inspectors, they work under his direction and report to him. This makes possible uniform work and the practical cooperation of the inspectors in different counties.

While inspection of the individual apiaries still is carried on, they have found that apiary demonstrations are the most effective method of reaching large numbers of beekeepers. By advertising such a demonstration in advance, it is possible to instruct a number of people in the detection of disease and its treatment by going through the apiary and giving each colony the exact attention that its condition demands. Last year the average attendance at these demonstrations was 32 persons, a total of 1800 attending the demonstrations during the season. In no other way could such a large number of persons be given proper instruction in the care of diseased apiaries.

The provincial apiarist is also secretary of the beekeepers' association. While the association elects its own officers they have the advantage of the college organization which can do many things not otherwise possible, and at a great saving in expense.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

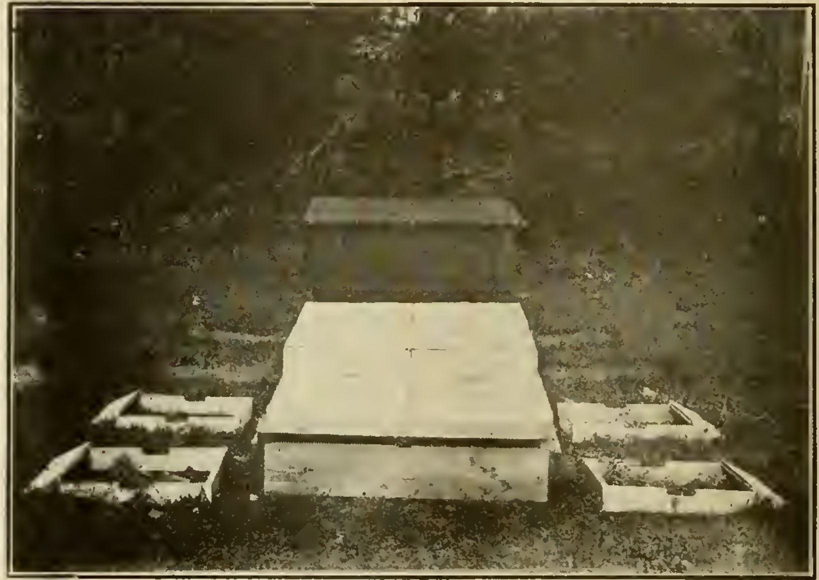
Wintering in Ontario

BY MISS R. B. PETTIT.

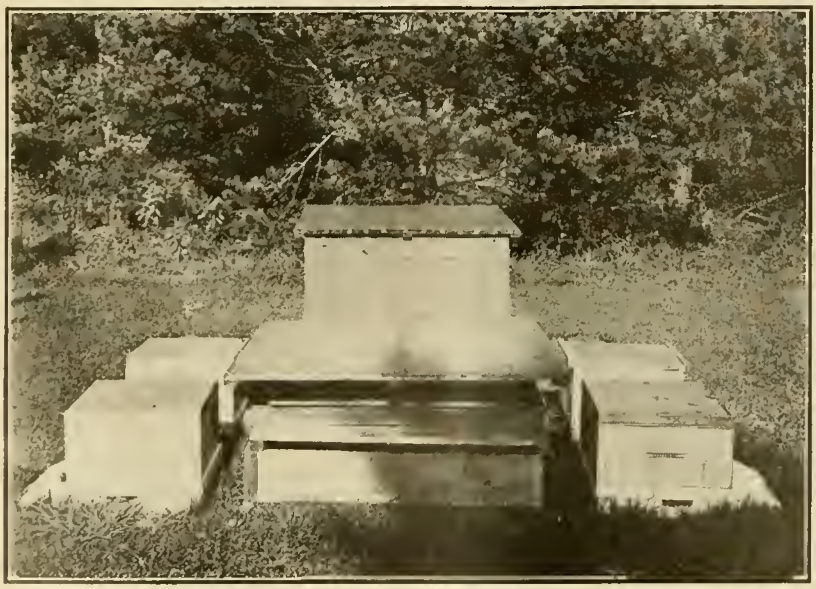
MY first experience in wintering bees took place several years before I was a practical beekeeper. It was with a cellar constructed in a sand-hill. The owner of the bees had secured a number of discarded freight car doors, and after an excavation was made in the sand-hill with team and scraper the doors were set up to form the walls of the cellar. Over this 2 by 11 inch hemlock planks set on edge formed joists for the ceiling. This was boarded on the underside and the 11-inch space filled with dry sawdust. A roof was placed immediately over that, covered with sheeting and felt roofing. An opening in the center of the ceiling provided for ventilation and for a vertical ladder for getting down into the cellar when the outside door was closed in winter. The west end of the gable roof opened out on the upper side of the hill, and the door to the cellar opened at the east end on a level with the ground below the hill. After the building was erected in the excavation' the sand was filled in to the level of the eaves all around.

About 100 colonies were stacked in the cellar and wintered fairly well; but the black roof absorbed too much heat from the sun during the latter part of winter, and it was difficult to regulate the cellar temperature.

My part of the experience consisted in making regular visits to the cellar during the winter, regulating temperature and reporting on general conditions to the beekeeper who was away for the winter. The first few trips are a well remembered experience. To descend into the black depths of the cellar by the dim light of a candle, to move cautiously up and down the narrow aisles, observe the condition of the clusters, the number of bees on floor, and to listen carefully to the language of the bees, who were telling me as best they could that they were either too warm or too cold; to dodge an occasional bee that shot out at the too close approach of the candle and the curious interloper prying into the privacy of their little bee world, was an experience to be remembered.



FOUR HIVES ARE LIFTED FROM THEIR SUMMER PLACES ONTO THE STAND



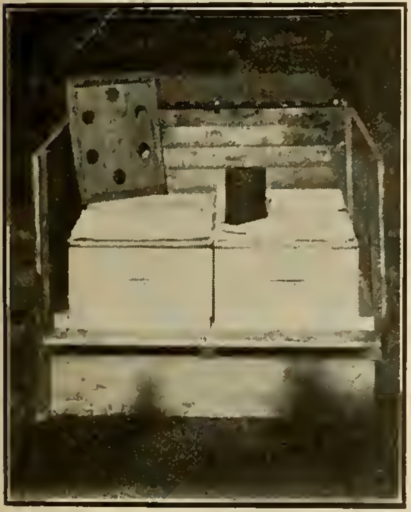
THE QUADRUPLE CASES ARE MADE COLLAPSIBLE

In summer the hives are placed in double rows with just room for the winter cases between the rows

When taken out in the spring the bees were placed on the low ground to the east and south of the hill, that they might be protected from cold north and west winds. This hill, though it was at the time sodded over, with a young orchard on it, had been formed by drifting sand and proved to be just the right shape for the wind to come sailing over the top and scoop in on the lower side. Consequently, it did not form a satisfactory wind-break. On the whole, then, the results of wintering in a cellar of this kind were not as good as one could wish.

My next experience was at the close of my first summer in a bee-yard. It consisted in packing about 110 colonies in quadruple cases with hives packed in planer shavings. These quadruple cases are made collapsible. In summer the hives are placed in double rows facing east and west, with just room for the winter cases between the rows. The stand consisting of 10 inch boards is leveled and the floor placed on it. Four hives are lifted back from the summer stands onto this, being placed in the center back to back and side to side. The sides of the case are then set up after the entrance bridges are adjusted, and packing material filled in even with the tops of the hives. The summer covers are removed and a feeder board placed on each hive. This feeder board consists of a honey-board with a number of 2½-inch holes bored in it—usually about four. Feeding is done by placing the syrup in 10 pound friction-top honey pails, with a number of small holes punched in the lid. These are inverted over the holes in the feeder boards, and, of course, the pressure of the atmosphere prevents any drip, provided the lid is sealed properly. The bees do the rest.

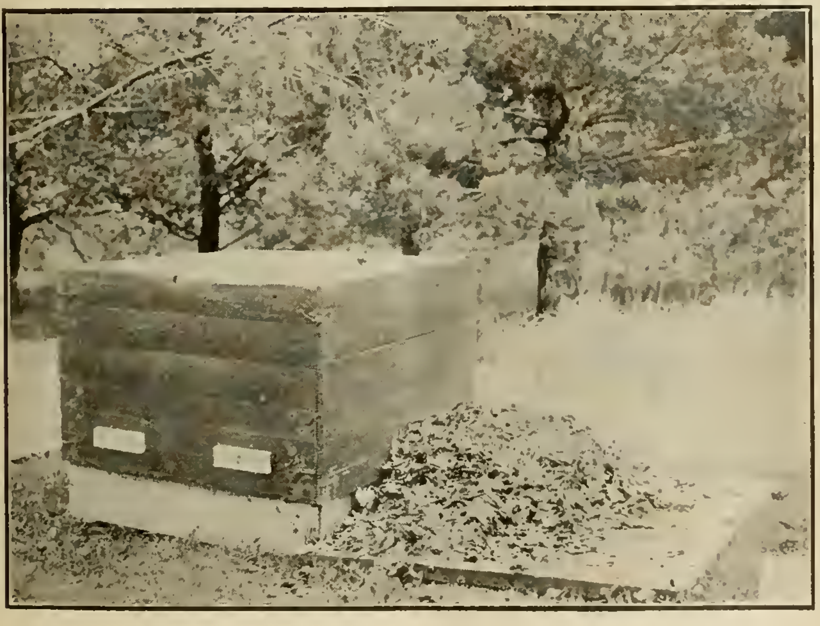
One great advantage for this style of feeder is that it places the feed as near as possible to the cluster, allowing the bees to take it without breaking cluster at all, as is necessary in almost any other style of feeder. If the nights are cool when the feeding is done, packing material is placed around the pails to keep the cluster heat from escaping through the thin feeder board. It is better to have the feed cold when it is put on, as there is more danger of leaking with warm syrup, and the bees take the cold syrup quite rapidly. At present prices of tin, these feeders are rather expensive, but if handled carefully they last quite a number of years. This method of feeding is followed by a number of our leading beekeepers, and is becoming more popular every year.



Summer Covers are Removed and a Feeder Board Placed on Each hive

After the feeder pails are taken off, cloths cut from outer sugar sacks are spread over the feeder boards, several thicknesses of newspaper over that and the packing material is filled in over all. Sometimes the upper packing is held loosely in sacks for convenience in examining colonies early in spring before they are unpacked.

This method of outdoor wintering I have found very satisfactory and have continued to practice it. I do not weigh my hives before packing them, but aim to get them in the cases as soon as possible after the supers are taken off early in September. As soon as the colonies in one yard are packed, the feed is put on, usually three or four pails to the hive By the time the feed is taken down, another apiary is packed and ready for the pails. Colonies that were heavy in stores will not have taken all of their feed. This is collected and given to colonies that are being fed later. If a fall flow causes brood rearing in September, feeding is delayed. Only best granulated sugar is used in preparing feed. Loss from granulated stores is too serious a matter to take any chance on feeding honey, or to leave even the heaviest hives without giving them the opportunity of taking some sugar syrup.



SIDES AND ENDS ARE SET UP AND PACKING MATERIAL PLACED IN

I find it advisable to have each apiary well sheltered by natural or artificial wind screens. The bees winter much better, and it is pleasanter working in the apiary during the windy days, which we often have in the late spring and early fall. Where one has many colonies, the work must go on from day to day whether things are exactly favorable or not.

We clipped queens in the apiary shown in the illustration, last spring when the wind was blowing cold outside, and could not detect any ill results from loss of brood or queens.

It is important that an apiary so sheltered be provided with shade, or that the windbreak be taken down in the summer, if one would avoid excessive swarming.

Another method of cellar wintering which I tried with an apiary of about 80 colonies of bees may be described as follows:

The cellar was deep and large, and had been blasted out of a rocky hillside. The owner had his dwelling over it, and used a part of it for other purposes. Within the cellar a small compartment was built, boarded up walls and ceiling, and covered with building paper on the sides. On the ceiling he spread sawdust to hold the warmth, and cracks were left in the boards of the ceiling to allow for upward ventilation.

In this cellar within a cellar, the hives were stored away, piled one on top of the other as usual, completely filling the room they occupied, with the exception of narrow aisles just wide enough for one to pass between the piles of hives. In this cellar so completely insulated from outdoor conditions, the bees wintered perfectly. Ventilation was given by opening the outer cellar door, the inner cellar being always left closed. They came out in splendid condition in April.

Collapsible Quadruple Cases Containing Four Colonies Fixed for the Long Winter

There are a great variety of outdoor packing cases and devices for feeding used. There are many variations of cellar arrangements, but I believe the methods described are typical of most of the wintering in Ontario. Broadly speaking, a line might be drawn from Georgian Bay just north of Lake Simcoe, and in a southeasterly direction to Lake Ontario. Most of the bees south and west of that are wintered on summer stands, and most of them toward the north and east of that line are wintered in cellars. Up until recent years a great deal of cellar wintering was practiced in southwestern Ontario, and one of the best beekeepers in Ontario, a Mr. Bowen, of Niagara Falls, in the southern part of the province, has recently built a rather expensive and very complete cellar for his bees; but the tendency all through the district mentioned is strongly toward outdoor wintering. Even beekeepers in the north and east are interested, and are experimenting with a view to changing over to that method.

This is not a fox ranch, but an apiary enclosed with wind screen of lath. In selecting an apiary site an unused dwelling is secured if possible. Note the rolling country, its steep rising ground with raspberry, sumac and second growth basswood.
—*R. B. Pettit, Georgetown.*

There are quite a few reasons why we like outdoor wintering better. It certainly takes more equipment, and the initial expense is perhaps greater than in a cellar, but the beekeeper is so much more independent; he can pack and feed his bees at his convenience. But for the cellar-wintered bees, one must watch and wait and guess at the best time for putting them in; then perhaps make a mistake by putting in too soon or too late. The same experience is repeated in the spring when the time comes for taking the bees out of the cellar. Cellar-wintered bees after they are removed from their winter quarters are exposed to the cold, inclement weather, that we get at different times for perhaps two months. A cellar requires a certain amount of watching and anxiety all winter to regulate temperature and ventilation. On the other hand, when bees are well prepared in the winter cases with plenty of good stores, we can go away and forget them. They are left in the winter cases until settled warm weather. If they need supers before that time, the cases are large enough to allow of supers being put on. If they need feed or any other attention in the spring, that can be done in the packing cases.

But after all is said, as long as there are bees and beekeepers there will be advocates of the different methods of wintering.

Georgetown, Ont.

MISCELLANEOUS NEWS ITEMS

Bee Meetings Scheduled.— Following is a list of meetings with dates as we now have them. Secretaries are urged to send us dates of meetings as early as possible so that we can give publicity through the Bee Journal:

Illinois State, Springfield, Nov. 15–16
Michigan, Lansing, Nov. 30, Dec. 1–2
Northwestern, Chicago, Dec. 4–5.
Iowa, Des Moines, Dec. 5–6.
Minnesota, Minneapolis, Dec. 5–6.
New York, Canandaigua, Dec. 5–6.

◆

"Pecky" Cypress is the title of a small 60-page handbook issued by the Southern Cypress Manufacturers' Association at New Orleans. Among other things the booklet contains a complete description of "Pecky" Cypress, as written up by an expert for the "Lumber Trade Journal." He avers that cypress contains chemical properties which render it immune to rot. After eating a few holes in the lumber the worm can go no farther.

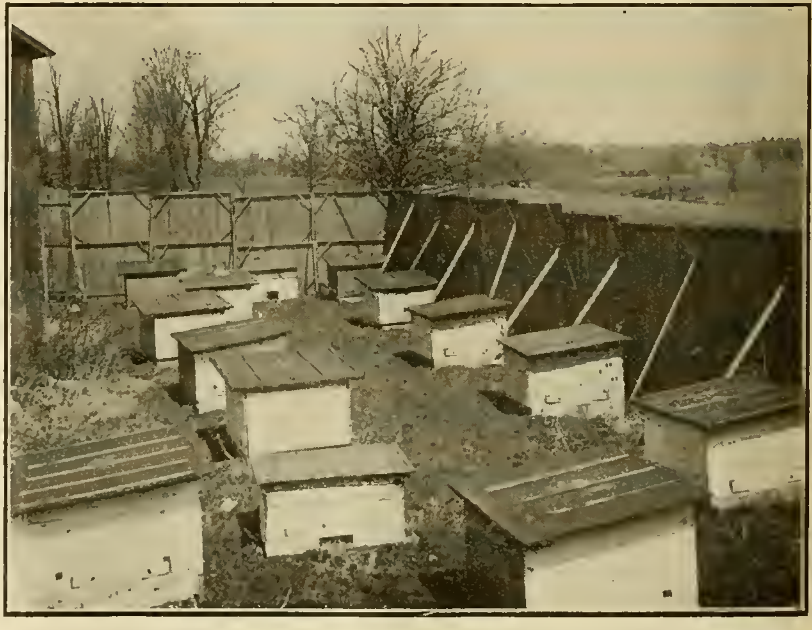
We believe there is a great future for cypress in the beekeeping line. Although the grade of the wood called "Pecky" would probably not do for beehives, it would be well for beekeepers to make the acquaintance of cypress in all grades as used for all purposes.

◆

Bee Hunting.—There seems to be an unusual demand this year for methods of hunting bee trees. We made the acquaintance of a little book on this subject a short time ago which we think will interest our subscribers. It is entitled "Bee Hunting," and is edited by A. R. Harding. Copies can be furnished from this office if desired. The regular postpaid price is 25 cents.

◆

Press Bulletin on Bees.—"Fall Management of Bees" is the subject of Press Bulletin No. 231 of the University of Missouri. The bulletin, which goes out to all newspapers of that State, advises movable combs, and urges early preparation and careful management for best wintering. There are in Missouri about 40,000 beekeepers owning 200,000 colonies of bees.



SPEYSIDE APIARY OF MISS PETTIT IN WINTERING CASES
The wind screen is made of plastering lath nailed on forms 6x8 feet; a convenient size for moving

Honey Boosted Again.—The Chicago News, in its issue of Oct. 2, was asked the following question by a subscriber: "Is not the appetite a safe guide to follow in selection of food?"

A portion of the reply given follows:

> Fond parents indulge the "sweet tooth" instinct of their loved ones by means of candy, jams, jellies, syrup, and the never ending list of denatured sweets upon which the happiness of the child is thought to depend so largely.
>
> In these delicacies such denatured products as refined sugar, glucose and sulphured molasses figure to a considerable extent.
>
> The more natural maple sugar and the unrefined natural brown sugar and honey are usually neglected in the preparation of the child's food. As a result the appetite for sweets that is undoubtedly an expression of the requirement of the body for the sugary principles of fruits is converted into one which only appreciates the more concentrated products of the cane refinery, the sulphur plant and the glucose factory.
>
> The jaded appetite of the middle aged man or woman has its beginning in the debased appetite of the sugar fed child. Sugar intoxication is as unnatural as whiskey intoxication.

◆

Northwestern Meeting at Chicago.—The Chicago-Northwestern Beekeepers' Association will meet in Chicago on Dec. 4 and 5, 1916. For information address the secretary, Mr. John C. Bull, Route 8, Valparaiso, Ind.

◆

Quebec Meeting. — The Beekeepers' Association of the Province of Quebec will hold its annual meeting at Montreal Nov. 15 and 16. For particulars, address Oscar Comiré, Secretary, Abenakis Springs, Quebec.

◆

New York State Meeting.—The annual meeting of the New York State Association of Beekeepers' Societies will be held in Canandaigua, N. Y., Dec. 5 and 6. F. Greiner, Secretary, Naples, N. Y.

◆

Iowa Meeting.—The Iowa State Beekeepers' Association will meet in Des Moines Dec. 5 and 6. Everybody invited.

For program, address Hamlin B. Miller, Marshalltown, Iowa.

◆

Illinois Meeting. — The 26th annual meeting of the Illinois State Beekeepers' Association will be held in Springfield on Wednesday and Thursday, Nov. 15 and 16, 1916. Further notice will be given in the dailies, and individual notices with program sent to all the members of the association. Jas. A. Stone, Secretary, Rt. 4, Springfield, Ill.

Minnesota Convention.—The Minnesota State Beekeepers' Association will meet at West Hotel, Minneapolis, Minn., Dec. 5 and 6, 1916.

For information concerning this meeting address L. V. France, Secretary, University Farm, St. Paul, Minn.

◆

Western New York Producers Meet.—The annual meeting of the Western New York Honey Producers' Association will be held Nov. 14 to 16, at the American Hotel Hall at Akron, N. Y. As this has been a good season for beekeepers a good attendance is expected. Every one interested in bees is welcome. WM. F. VOLLMER, *Sec.*

◆

Chicago Bank Uses Bees to Teach Thrift.—A well known Chicago bank, the Greenebaum Sons Bank & Trust Company, recently attracted considerable new business by means of a window display in which bees were exhibited. The idea was originated by W. J. Greenebaum, cashier of the bank, who decided that live bees could be made to serve as an object lesson in thrift.

SAVINGS DEPARTMENT
GREENEBAUM SONS BANK AND TRUST COMPANY

A CHICAGO BANK USES HONEY BEES TO TEACH THRIFT

The window was arranged to represent a rural scene, with a clover field, farm house, and grazing cattle. The base of the window was covered with grass matting, earth, and bark, and two regulation beehives were installed. Savings banks were strewn along a path leading from the hives to the clover field, and sign posts drove home the lesson of thrift by means of the following legends:

> "If men were as wise as these little bees, there would never be any paupers."
>
> "If these bees had not saved their honey, they would be starving now Are you saving any money for future use?"
>
> "If you want some honey in later days when honey may be hard to get, start storing a little every day."

An accident when the hives were being brought to the bank turned out to be "silver lined." The man carrying the glass hives collided with a pedestrian just before entering the bank, and dropped a hive containg several thousand bees. The result was a near-riot which, however, was rather more amusing than serious, and the newspapers found in it material for first-page articles, all of which mentioned the unique window display. Mr. Greenebaum was quoted as saying: "I am sorry this accident happened. I wanted to give Chicagoans a lesson in economy, but did not intend it should be driven in that hard.

"The display drew large crowds of interested spectators."

◆

A County Exhibit.—Langlade County, Wis., beemen put on an excellent display at the Free County Fair at Antigo, Sept. 19 to 22. The fair management placed a large booth in the main fair building at the disposal of the beekeepers. The booth was attractively decorated with bunting, and honey, both comb and extracted, and other bee-products were tastefully arranged about the booth. Bee-supplies also formed part of the exhibit.

Interested house-wives were given an attractive booklet with recipes on the use of honey in cooking. Proof of the esteem in which the booklets are held was shown in the way neighbors and friends of women who got them came back the next day for copies.

As an advertising proposition for the beemen, the booth was certainly worth while. One beeman sold 50 gallons of honey during the fair, and the first morning after the close received an order for 25 gallons more from a Minneapolis man who had visited the fair.

The exhibit was put on under the auspices of the Northern Wisconsin Beekeepers' Association, organized at Antigo in August.

Sanders to Pennsylvania.—J. G. Sanders, who has been State Entomologist for Wisconsin, and as such has shown his interest in beekeeping, has resigned to become Economist Zoologist with the University of Pennsylvania at Harrisburg. No doubt that he will carry his interest in bees to this new work.

That Carolina Bee Club Again.—Bruce Anderson, that live county agent mentioned in one of our summer numbers is out with another bulletin to his bee club. This time he is advising his members to get their bees ready for winter. The items which he insists make for good wintering are good queens in strong colonies, plenty of good feed, and some sort of winter protection. Right again.

Dr. White to Cereal and Forage Insect Investigation.—"Dr. G. F. White has concluded his investigations of bee diseases with the Government at Washington, D. C., and will be on furlough until April 1, 1917, at which time he will resume insect disease investigations and will be connected with the office of Cereal & Forage Insect Investigations."

The bee disease investigations will progress without interruption, the work being done by Dr. A. H. McCray, for several years of the staff, and since July, 1915 in charge of the disease work at the Drummond Laboratory.

Extension Work by the Government Department.—Beekeepers will be interested in the following letter from Dr. E. F. Phillips, in charge of bee investigations at Washington, D. C.:

The present Agricultural Appropriation bill carries an increase of $5000 for the work in beekeeping in the Bureau of Apiculture. It is proposed using this fund to inaugurate extension and demonstration work in beekeeping in the southern States, similar to the work done by Mr. E. G. Carr for this bureau last year in North Carolina. Arrangements have already been completed for the continuance of the work in North Carolina, in cooperation with the North Carolina Department of Agriculture, and Mr. George H. Rea, former inspector of apiaries of Pennsylvania, has gone to Raleigh to begin the work. Negotiations are under way for similar work in another southern State, concerning which announcement will be made later. A third man is to be employed to do work of a more general character throughout the South, in cooperation with the office of Extension Work in the South, of this department. In all cases the men employed are to work in close cooperation with the County Agricultural Agents.

The southern States offer great opportunity for beekeeping, and much interest has been shown in his work. There are no sections of the country where there are more bees, although many of them receive inadequate care. An interesting fact is that the South now consumes almost all of its own honey and buys some from other sections of the country. For these and many other reasons, it has seemed best to confine this work for the present to the southern States.

DEATH OF DR. JOHN CLINE

Dr. Cline was born at Followfield, Crawford Co., Pa., Feb. 24, 1818, and died at the home of his son, J. G. Cline, in the town of Fayette, Wis., Sept. 28, 1916.

He came to Wisconsin in 1851, and purchased a farm on which he resided until a few years ago, when the infirmities of his unusual age compelled him to give up the more strenuous efforts of farm life.

Dr. Cline was an enthusiastic beekeeper. His experience extended over a continuous period of 77 years, and until two years ago, alone, cared for an apiary numbering from 50 to 100 colonies. He was probably in point of age and continuous service the oldest beekeeper in Wisconsin. He was a quiet enthusiast on the subject, and was a ready instructor to those who needed his counsel.

It was my good fortune to know Dr. Cline intimately for 65 years, and to him I owe more than to any other man for the success that I have had in the profession we both so dearly loved.

He was for many years a member of the National Beekeepers' Association. In the passing of Dr. Cline the profession has met with a serious loss, his neighbors a true friend, and the world a noble christian character.

C. R. Bridgman.

Dark Honey Crop Report.—The Crop Report Committee of the Ontario Beekeepers' Association met on Friday, Sept. 8, to consider the crop of dark honey. It was found that 89 members had reported 91,325 pounds from 5091 colonies, being an average of 18 pounds per colony. This is about the same as last year's average, but owing to high prices prevailing in all similar lines, the committee advises members to ask 8½ cents to 9 cents per pound wholesale, depending upon the size of the package and the quantity sold in one order. No buckwheat honey should be retailed for less than 10 cents per pound.

In issuing this report a year ago, the statement was made that the local demand for white honey was exceedingly good. The situation this year is if anything better than a year ago, and the members have sold out entirely at prices as good as, if not better, than those recommended by the committee. When it is remembered that nearly a year must go around before another crop is harvested, and weather conditions have not been the best for next year's clover, beekeepers need have no worry about selling their honey at good prices.

Of course, dealers have been able to secure a certain amount of cheap honey. It is always this way, and while the beekeepers who sold cheap honey are the losers, it is good for the honey trade that dealers are able to make an extra good profit on some of the honey they handle. The secretary frequently has enquiries for names of beekeepers having honey for sale, and while responsibility is not assumed he is willing to put dealer and member in communication if so requested by any member.

Signed by the committee:
Wm. Couse, W. J. Craig,
H. B. Sibbald, Morley Pettit,
Sec.-Treas.

Michigan's Thanksgiving Convention.—Michigan beekeepers will be able to enjoy a very profitable program at the forthcoming convention in Lansing, on Nov. 30, Dec. 1 and 2. While the list of speakers is not yet complete, a glance will show that it will pay every beekeeper to make a special effort to be present and enjoy the feast of good things both mentally and bodily.

Among other things we shall have:

Mr. David Running, Filion—President's Address.

Mr. C. P. Dadant, Hamilton, Ill.—"Prevention of Swarming."

Mr. E. R Root, Medina, Ohio—"Establishing a Trade Name for Honey."

Mr. E. D Townsend, Northstar—"The Sale of Honey."

Dr. E. F. Phillips, Washington, D. C.—"Extension Work in Beekeeping."

Mr. Frank C. Pellett, Atlantic, Iowa—"Some Beekeepers I Have Met." (Illustrated lecture.)

Mr, A. G. Woodman, Grand Rapids—"Possibilities of the Combless Package."

Mr. Ira D. Bartlett, East Jordan—"Choosing a Location for Beekeeping."

Mr. Leonard Griggs, Flint—"Successful Wintering of Bees in Cellar."

Mr. Floyd Markham, Ypsilanti—"Which Should Beekeepers Produce, Extracted or Comb Honey?"

Mr. F. Eric Millen, East Lansing—"Some Reasons for Failures in Beekeeping."

A banquet supper will be given by Messrs. Root & Co., of Medina, Ohio, and Messrs. M. H. Hunt & Son, of Lansing, Mich.

This year the association is giving away four medals, to be won outright for exhibits of about 150 pounds of comb and extracted honey. The comb honey medals will bear the portrait of Dr. C. C. Miller, and the extracted honey medals will bear the portrait of L. L. Langstroth—there will be a silver and a bronze medal for each class.

For the small class exhibits there will be nicely gotten up diplomas, and these will take the place of cash or bee-supplies which have been given formerly. These diplomas should prove good advertisements to the winners in their home localities, and we feel sure that the winners will be proud of them.

Following is a list of exhibits:

A. 150 sections of comb honey—1st premium, Miller silver medal; 2d, bronze medal; 3d, diploma.

B, 150 pounds of extracted honey—1st premium, Langstroth silver medal; 2d, bronze medal; 3d, diploma.

C, 12 sections of clover comb honey—1st, 2d, and 3d premiums, diplomas.

D, 12 sections of raspberry or other light comb honey—1st, 2d, and 3d premiums, diplomas.

E, 12 sections of amber or dark honey—1st, 2d, and 3d premiums, diplomas.

F, 12 pounds of clover extracted honey—1st, 2d, and 3d premiums, diplomas.

G, 12 pounds of raspberry or other light extracted honey—1st, 2d, and 3d premiums, diplomas.

H, 28 pounds of amber or dark extracted honey—1st, 2d, and 3d premiums, diplomas.

I, 12 pounds of extracted candied honey—most salable condition for market—1st, 2d, and 3d premiums, diplomas.

J, 12 pounds of beeswax—1st, 2d, and 3d premiums, diplomas.

K, One dozen honey cookies.

L, One dozen bran honey cookies.

M, Two-pound honey fruit cake.

N, Best new apiarian appliance.

Diplomas will be given for classes *I* to *L* as in other classes. Exhibits must not bear the name or mark of exhibitor until after judged. All exhibits must be the product of the exhibitor or a member of his family.

All exhibits must be in place on the evening of Nov. 30. The gold medal is given by the American manufacturers of bee-supplies, and is known as the Manufacturers' medal.

The silver medal is given by the Michigan jobbers in bee-supplies, and is known as Jobbers' medal.

The bronze medal is given by the association, and is known as the Association medal.

The challenge medals must be won three times before becoming the property of the exhibitor. This is the second year for competition for these medals.

Programs will be sent to all members of the association, and can be secured by any other interested beekeeper.

F. ERIC MILLEN, *Sec.-Treas.*
East Lansing, Mich.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

How to Winter Afterswarms

What would be the best thing to do with four colonies of bees that are afterswarms and have stored practically no honey for their use this winter? They have young queens and are breeding good. There are about six frames of bees in each colony and nearly all of the space is filled with honey. Not much prospect of any honey flow this fall.

I have ten other colonies in good shape. Would it be practical to unite them with some of those colonies? And if so, how would be the best way to do it? INDIANA.

ANSWERS.—From your description these are good colonies that you can have ready for winter by merely feeding them. If you wish to unite each one of them with another colony, there would be nothing difficult in that. Kill the queen that you think poorest; put a sheet of newspaper over one of them (of course directly over the brood-frames), set the other hive (without any bottom-board) directly on this, and three days or mure later put the best frames of brood in the lower story. You can unite without killing either queen, although it is at least a little better to kill one of them.

Introducing Queens—Hatching Queen in Cell

In the distress (or smoke) method of introducing queens, how *many* puffs of white, choky smoke must be given? Would four good puffs with a good smoker be too much? Must the roar caused by the puffs be heard continually for ten or more minutes, namely up to the moment when the one-inch wide space at the entrance is opened again; or can it go dwindling down so that it can hardly be heard at the end of ten minutes, and if not heard at all at the end of ten minutes is it a sure sign not enough smoke was given?

In the distress method, Arthur C. Miller, in Gleanings in Bee Culture, page 63, says that a failure in this method is known the same or next day. How is it known, by opening the hive, or if the queen is not accepted, do you find her at the entrance of the hive dead?

In the starvation (Simmins) method, is failure known also the same or next day? How is it known?

I put a fine queen-cell into a cell protector, put the protector into a nucleus into which I shook about two cupfulls of bees and put the nucleus in a dark cellar for 70 hours. When I took the nucleus out and looked at the protector, the cell was almost all eaten up by the bees, though I had put a tin stopper at the wide entrance of the protector. What was the mistake in this case, as there was no queen in the nucleus?

MONTANA.

ANSWER.—I suppose three puffs, if strong enough, would be all right, and four puffs could hardly do much harm. The roaring would die down in ten minutes or less.

In the place to which you refer in Gleanings, Mr. Arthur C. Miller says: "Even were it not better than the cage method, I should continue to use it, for a failure is known the same or the next day, while by the cage method it is sometimes a week before the queen is out, and a day or two more before we know she is safe." I think his idea is that when the distress method is used we will find the queen laying the same or the next day, while with the cage method it will be a day later, or more, before the queen begins to lay, and sometimes more than a week later.

By the Simmins method the queen ought to be laying sooner than if caged. She certainly has the chance to lay at once if kindly accepted, whereas there is delay by caging, no matter how friendly the bees may be. The presence of eggs is proof of success, while the absence of eggs is proof of failure, although by no means sure proof, for the laying may be much delayed. The presence of the dead queen at the entrance is prompt proof of failure, although one cannot always be sure of finding her there after she is killed.

In the case of the cell gnawed to pieces it does not necessarily follow that there was any mistake on your part. It may merely mean that the bees departed from their usual behavior, and did not respect the point of the cell, but gnawed it down. I should have just a little suspicion, however, that another virgin was in the nucleus and did the gnawing. Virgins have a craze for gnawing down queen-cells, even the cells from which they themselves have emerged. Only a day ago I found in a nursery a virgin not a day old, and she had torn out one side of the cell from which she had emerged.

Kind of Bees

What is the difference between golden Italian bees, leather colored and 3-banded? Which do you think are the best workers, and the best color?

I heard a man say this summer there was only one kind of black bees and that was the German. I was at R. A. Morgan's, of Vermillion, S. Dak., and he had some black bees that were as big or bigger than the Italians. They were very gentle. What kind were they? I am starting beekeeping again and have full blooded stock only, and expect to keep them that way. I want to use 10-frame hives with 8-frame supers, or 8-frame hives on top and leave space at the back so I can remove brood in the middle of the honey flow and replace it with empty frames without lifting off the supers on top of the hives, then I can use that brood for increase or put it above, and when the brood hatches the frames will be filled with honey.

Do you think the plan will be all right or do you know of any better way?

IOWA.

ANSWER.—Golden Italians are supposed to have workers mostly with five bands. Leather-colored are what the name indicates, much the same color as fair leather, being darker than the brighter yellow bees. Like most others, I prefer the darker bees, although there are good and poor in all kinds.

Carniolan and Caucasians are much like black bees in color, but with lighter bands. Sometimes it is difficult to distinguish them from blacks.

I know of only one kind of black bees, and yet there may be a difference in that one kind. I suppose from what you say that Mr. Morgan's bees were blacks.

Better not try the plan you mention on a large scale until you find out whether you will like it.

Kind of Queens Compared—Requeening

1. Taking the golden, 3 banded and leather colored Italians, how do they compare in gentleness, hardiness, and honey getting qualities, taken as a race?

2. Are the goldens more inclined to "borrow" or rob than the others mentioned?

3. Will they stand our cold winters, wintering out, as well as the others?

4. I had some leather-colored bees but they have "mixed" with others, and I now have everything from three banders to all black in every hive, but they are very quiet and are fair workers, but if I was sure that I would not get something worse than what I have, I would like to get some full-blooded stock, and I am "struck" on the appearance of the goldens. Would you advise me to make the change?

5. Which would be best, to requeen early in the spring and avoid the hybrid drones or requeen during swarming time and use fertile queens from a dealer?

6. Is there any way to tell which hive a swarm came from, when, as they frequently do, they have come out unobserved? If the queen is clipped, one does not know where to look for her, and if one practices the method of hiving the swarm on the old stand, putting the old colony on a new stand to discourage afterswarming, one is equally "up against it" if it is not known which colony cast the swarm.

7. Some beekeepers here leave their extracting combs on the hive until October or November, allowing the bees to thoroughly ripen and thicken it, and at the same time they will carry down what they need for winter stores; of course, this "easy way" is open to criticism, but the main problem here is to get the bees off the combs. Escapes are very slow, and in some cases will not remove them at all, so some have tried the "carbolic acid method." A dilute solution of carbolic acid is used and a few drops are sprinkled on a cloth which is laid over

the frames and the cover put on for about 20 minutes or less when every bee will be driven down in the brood-chamber, or even out of the hive if left too long, and if the cloth is left on the super not a robber bee will touch it. Do you think this method injurious to the bees or brood if used carefully?

8. Do the 4x5 plain sections sell as readily as the 4¼x4¼ beeway section on the city honey markets, quality and grade of honey being equal? INQUIRER.

ANSWERS.—1. If you will look through recent numbers you will find your questions as to races mostly answered. It should be understood that these three kinds cannot be classified as exactly distinct and separate in their characteristics. There are variations in all three. Indeed it should be said that 3-banders and leather-colored are not to be counted as two classes, for when we speak of leather-colored we mean 3-banded Italians of a darker hue, and when you say 3-banders you no doubt mean the lighter-colored. You will find good, bad, and indifferent in all three. You may have leather-colored that are poor, and you might get goldens better, and *vice versa*. On the whole I should in general consider that the good characteristics you mention are more likely to be found in the leather-colored than in the others, although the beauty of the goldens is not a thing to be despised.

2. I think not.

3. Yes, if you get a good strain, although some of them are likely to be a little tender.

4. Other things being equal, your best plan would be to get at least one pure queen of the kind you started with, breeding from her and weeding out all poorer stock. Having already part of that blood, it will be easier to get the whole of that kind. You can, of course, change all into goldens, but you're hardly so sure of good stock.

5. Do both. Get a pure queen early, and breed from her so as to introduce her daughters late in the season, and any time when there is any need of a new queen. I am not entirely certain what you mean as to "hybrid drones." If you get a pure queen, her daughter's drones will be pure. It's not so important about a drone's mother, but he should have a good grandmother.

6. Some sprinkle flour on a few bees of the swarm, and then watch which hive the floury bees enter. If your queens are clipped you can nearly always tell from which hive a swarm came by watching to which hive it returns.

7. I hardly think so.

8. When the 4x5 sections first made their appearance, much was said about their bringing a higher price, and possibly they did in some markets. Possibly that is still the case, but in markets that I know about the common 4¼x4¼ have rather the preference.

How to Get Rid of Moth Larvae

1. I would like to know what to do with a colony of bees that is troubled with moth; since early in the season I have seen the bees carrying out moth larvæ and web, but thinking they would be able to clean the moth out I left them alone until I saw that something would have to be done, so today, Sept. 14, I transferred the bees into a new hive. There was not much honey or brood in the old hive, but there certainly was a lot of moth larvæ. After I found the queen and put her in the new hive the bees followed, I then turned the combs out on a board and let the chickens clean out the larva.

2. Would moth-balls in the hive have done any good early in the season, or can you suggest anything that could have been done? Do you think it is possible for me to save this colony? MICHIGAN.

1. If you put in enough moth-balls you can keep out the moth, but you will drive out the bees; so don't try moth-balls. The thing to do is to have colonies so vigorous and strong that they will not let the moth get the upper hand. Italians are away ahead of blacks in fighting the moth; so Italianize your stock and you need pay no attention to the moth unless you have a *very* weak colony. On your part, you can do something to help. If a colony is weak, don't let it have more combs than it can cover, and strengthen it as soon as you can. If you care to take the trouble, you can dig the big larvæ out of the combs. With a pin or wire nail, pick open one end of the burrow of a larva, then beginning at the other end pick open until you drive the larva out of the hole first made, when you can wreak your vengeance upon it Another way is to squirt kerosene or gasoline upon the miscreant with a sewing-machine oil-can.

2. If the colony is strong enough, and there is a strong fall flow, it ought to make out; if the flow is not enough you will have to feed.

Room for Queen—What Kind of Hives for Comb Honey?

1. I run entirely for extracted honey and have been giving the queen free access to all the supers above the brood-chamber, sometimes two and three supers. The queen lays in all the supers now, and when I examine each colony every seven days, and have to go through all supers to examine the brood.

2. If I put on an excluder and keep the queen below, is the brood-chamber of an 8-frame hive large enough for a prolific queen; if not, is a 10-frame hive large enough?

3. For comb honey do you use 8 or 10 frame hives?

4. A large beekeeeper told me that he uses 8-frame hives exclusively for comb honey, and that he takes out one frame on each side and puts a dummy in their place, and only allows the queen six frames for a brood-chamber and says that is enough. What is your opinion of this?

5. Do you think golden bees are immune from European foulbrood?

6. Do you think golden bees are as good honey gatherers as other bees? Which do you prefer? I want to requeen this fall. IOWA.

ANSWERS.—1. Wouldn't it lighten the job if you didn't go through your hives quite so often? Don't you think ten days will do as well as seven?

2. During the heavy harvest eight frames will accommodate most queens, provided she keeps them all well filled with brood. Some queens will do this, and some will leave the two outside combs for honey and pollen, with quite a circle of honey in the other frames. A 10-frame hive is safer.

3. Eight-frame; but if I were a beginner anew I should do some studying about having a larger hive.

4. Perhaps his queens are satisfied with only six combs; I think mine would strike.

5. I don't believe any bee is entirely immune, although some are more nearly immune than others. I would take my chances on leather-colored Italians, although some goldens may be just as good.

6. Taken as a whole, I think the leather-colored will excel, although some goldens may be just as good. There are good and bad in both.

Faulty Queen

On June 14 I took three frames of brood and ripe queen-cells for a start and closed the entrance 24 hours. July 4 I gave a frame of brood with queen-cell, having found evidence that they were queenless. July 26 I gave them a frame of brood, there being no queen present. August 3 I gave a frame with brood and bees, from a desire to keep the colony in fair strength. August 27 I found unsealed brood. September 2 I found sealed brood, apparently drone-brood in worker-cells (and a few worker brood), two sides of one frame well covered and a small quantity on two other frames. There were two sealed queen-cells and one or two unsealed. The sealed cells were cut out and and the queen taken away. She was a small queen and a very slow mover, but I could not see any defect about her.

This day I have ordered an untested queen to put in this hive.

1. Do you call this a drone-layer?

2. If so, how do you account for a few normal worker cells?

3. What would have hatched from those queen-cells?

4. Will this colony be likely to accept a laying queen?

5. How should this colony have been managed from July, when they were found to be queenless? ILLINOIS.

ANSWERS.—1. I hardly know. Usually the term "drone layer" is applied to a queen which produces drone-brood only. A queen that has a small proportion of drone-brood in worker-cells is generally called a failing queen, but when this happens with a queen when she first begins to lay, I know of no name for her except to call her a poor queen. In the present case there was so small a proportion of worker-brood that she was certainly a "poor" queen, and it would be hardly out of the way to call her a drone-layer.

2. As already hinted, faulty queens run all the way from having only a small proportion of drones in worker-cells up to those which produce no worker-brood at all. This queen just happened to be one of those that have mostly drone-brood.

3. Possibly queens; likely nothing; for when bees try to make a queen out of drone-brood, the drone seems never to hatch out.

4. Perhaps, but the chances are not the best.

5 The best thing would have been to unite it with a normal colony, starting a new nucleus; or, to take away all combs with adhering bees (giving them to other colonies), then put in the hive one or two frames of brood with adhering bees. The field-bees would then return to give heart to the new comers.

Destroying Moth

I have several hives that are infected by grubs from the eggs of millers. I would like to know if there is any way by which I could kill these grubs and eggs without spoiling the combs for the bees? IOWA.

ANSWER.—The easiest and best way to have such combs cleaned up is to give them to a strong colony of bees, and for this purpose Italians are greatly superior to blacks. Another easy way is to leave them outdoors through the winter, for freezing destroys both larvæ and eggs. If neither of these ways is available, and you want to get rid of the larger larvæ at once, take a small oil-can, such as used for sewing-machines, and squirt a little gasoline on the miscreant. You may fumigate the combs with sulphur, but this does not destroy the eggs, and so must be repeated in perhaps two weeks. Carbon disulphide will destroy eggs as well as larvæ. Tier up the combs in hive-bodies, an empty body on top, and in this put a saucer and pour it half full of the liquid and cover up quickly.

Worms in Hive

I am sending an unfilled section of honey as a sample to show what has destroyed the colony of bees that it was taken from.

I examined all the hives yesterday, and was surprised to find this colony destroyed and all full of eggs, and these worms in the sections and brood-chamber. All of the honey is gone, and nothing but the comb left. There are a lot of web in the space between each frame full of dead and live bees. The sections were all full of honey, mostly capped about six weeks ago.

1. What kind of an insect or worm is it, and what is its name?

2. If the bees from another colony would

rob that hive and carry the honey back to their hive, would they get infested with it, too?

3 Could I clean the sections and let them be filled next year, as the combs in some of them loos to be in good condition?

4. Has this worm gotten into the hive and compelled the bees to leave, and then some other bees robbed the honey? ILLINOIS.

ANSWERS—1. It is the wax-moth (*Galleria mellonella*), called also bee-moth, which is found almost everywhere where bees are kept.

2. No.

3. Yes.

4. The moth did not take full possession until the colony became very weak. You will probably always find more or less of the larvæ of the wax-moth in your hives as long as you keep bees, but they are not likely to make any great trouble so long as colonies are strong, especially if you have Italians. Black bees give up more readily. In the present case the likelihood is that the colony became queenless and weak, and then the moth was allowed to have its own way. Have Italians and only strong colonies, and you need pay no attention to the moth.

Worms Again

I have one colony of bees in an 8-frame hive, which gathered no honey this summer. They started building one comb in the super, but that's as far as they got. I looked them over and found them full of those white worms. What are they, and what do they do, and what should I do? MINNESOTA.

ANSWER.—The white worms you found are the larvæ of the wax-moth, but they are not the cause of the trouble, and only came in because of the defenseless condition of the colony. See reply to "Illinois."

Honey for Winter

1. On Sept. 12 I took off a super about one-half sealed over. I stored it, placing paper above and below; tried to get it about air tight. On Sept. 23 I reopened it and found several small white worms; some in the comb looked like the bee-moth worm. What was it and what caused it?

2. Will the bees store enough honey in the hive-body to run them through winter, if the super is left on until freezing weather?

3. Which are considered the better, golden or leather-colored Italian bees, for honey gatherers? MISSOURI.

ANSWERS.—1. They are the larvæ of the wax-moth, that came from eggs laid while the super was on the hive. See answer to "Illinois."

2. If extracting combs are in the super it is uncertain. If sections containing honey are left on until freezing, there is little doubt that enough honey will be in the brood-chamber for winter.

3. The best goldens are better than the poorest leather-colored, and *vice versa*. On the whole the leather-colored are generally preferred.

Uniting Colonies—Dummies

1. I expect to unite quite a number of colonies, and when it will come to making up, what is to be the final brood-chamber? I feel a little in doubt about where to place the frames with honey, viz.: half and half at each side and others in the middle, or all on one side and the frames on the other, or *how?*

2. How much better, if at all, are dummies that fill up *exactly* a space analogous to a frame, even so that the bees can fly up between, or just anything to fill the space not occupied by frames? The question about dummies, is especially so as to use some with anti-swarm operations, and also when a super is over the colony.

PENNSYLVANIA.

ANSWERS.—1 You can hardly go wrong to arrange the combs in any kind of order. To get enough honey in the hive it is not likely that you will have any combs entirely empty, neither is it likely that they will all be entirely full. So with any sort of arrangement there will be some empty space in the lower parts of the combs, enough to accommodate the bees, although some hold that bees really need no such empty space. When bees are left to their own devices they usually have the outside combs fullest, and a hemisphere of empty cells centrally. If you want to be particular about it you can try to imitate this.

2. It doesn't matter at all, just so the bees are not allowed to build in the vacancy. But at any time when no queen is in the colony, only a single dummy is needed, and that next to the frame or frames present, for bees rarely build comb in a queenless colony.

REPORTS AND EXPERIENCES

Pound Packages

Have you any data on how far bees in pound packages can be successfully shipped by express? I do not believe they can be successfully shipped from California to Illinois, and I base this belief on two experiments. Last year I ordered two one-pound packages from one of the largest dealers in bees in that State. The bees came in the latter part of June, a little late to be sure, and were practically all dead, so that I simply turned them all out on the ground

The California firm agreed to duplicate the order this spring, and did so, the two one-pound packages arriving June 1, but, as before, the bees were, I should say, 95 percent dead.

I cannot blame the concern which shipped the bees, as they are certainly up-to-date in their methods. In order to acquire this knowledge I paid $3 00 for bees and two express charges of $1.37 each. On the other hand I have received from Texas half a dozen pound packages of bees, and in each instance they arrived in fine condition. My experience, therefore, leads me to think that while bees may stand a thousand mile trip by express they are very likely to succumb when the distance is doubled.

Glen Ellyn, Ill. SUBSCRIBER.

[It is our opinion that properly packed bees ought to readily stand the trip from California to Illinois. If others have had experience along this line, we would like to hear from them.—EDITOR.]

Influence of Nurse Bees

I noticed on page 14 of the January number, "The Influence of the Nurse Bees Upon the Young Bees." I had a very cross black colony in my home yard. I made a 2 frame nucleus out of it, and put it away back where no one was passing.

The old colony reared a young queen, and she was very prolific, kept the hive boiling over with bees all the time, so I reared a grandaughter from them, and now all three generations are tame and very prolific.

At first it was not safe to pass through my yard without a veil. Now I can open any hive any time without a veil. The bees are not always to blame for their behavior. The handling of them is more important.

Havelock, N. C. P. SCHAFFHAUSER.

Season Report for Bee Journal

Sweet clover is the main reliance here, and from some cause there was none this year where it had formerly been abundant, and no where has there been as much as usual, so the yield has varied more than usual, some getting very little surplus and others a better crop than for years.

My own crop was fine, as sweet clover was fairly plentiful and more cleome than I have ever seen before. I am now in the flush of a fine fall flow from Spanish-needle, the first in seven or eight years

Weather throughout has been favorable for honey gathering, but swarming has been very much less than usual. I only had two swarms from 80 colonies. LOUIS MACEY.

North Platte, Nebr.

Bitter Honey

I think "Tennessee," in American Bee Journal for November, 1915, has hit upon the cause of his trouble with bitter honey in the supers in spring. While keeping bees in the South I have more than once had a similar experience. The brood-chamber would be solidly packed with this bitterweed honey; then the next spring, when new honey and new pollen started brood-rearing with a rush, much of the bitter honey would be carried up into the supers and mixed with the new honey. It required only a very small quantity to spoil the flavor of the new crop, as it has about the most bitter taste of anything bitter I ever had the misfortune to get into my mouth. Even the combs that have contained bitterweed honey for any considerable length of time, will impart a "bad taste" to new honey that may be stored in them.

It will pay "Tennessee" to extract all bitter honey remaining in the hives at the beginning of the spring flow, for otherwise he will surely have trouble with it.

I am sure the honey from peach bloom is not bitter. We have hundreds of acres here, and the bees work it continuously from beginning to ending of the blooming period and the honey gathered at this time is always of fine flavor.

I have never known the bees to work either black gum or dogwood sufficiently to prove what the honey is like.

J. D. YANCEY.

Port Columbia, Wash., Nov. 22.

Yellow Sweet Clover Fine

Our bees have done quite well here this season. We had 35 acres of our mammoth yellow bloom and six acres of white sweet bloom. For about three weeks the bees did not accomplish very much on the yellow bloom. It was too rainy. It bloomed for over two months, and they stored away a fine lot of honey. I think before many years the Flathead Valley will be quite a honey country, for many are beginning to plant yellow clover; that is bound to be the coming hay crop. If a wet spell of weather sets in after it is cut, it comes out of it in better shape than any other hay crop I am acquainted with, and for quantity and quality it cannot be beaten, alfalfa not excepted.

J. D. KAUFMAN.

Kalispell, Mont., Oct. 2.

Fine Crop

I commenced with 11 colonies this spring and increased to 18 and caught five swarms, so I have 33 now. My best colony, the one that I did not divide, stored over 159 pounds.

I sold 576 pounds of comb honey at 15 cents, and 1119 pounds of extracted at 10 cents a pound. They averaged me a little over 154 pounds per colony, spring count. Prospects are fine for a good crop next year, so far. White clover is fine. C. W. DALE.

Sedalia, Mo.

The English Routed by Bees

Many a time, in the present European war, bees have proven their fighting qualities. Here is an older example, copied for "Forty-one Years in India:"

"All the troops were advancing. Lord Roberts was employed for a little time within an enlosure at Alambagh, when he heard great confusion, as of a panic among his troops on the plain. Getting on the roof, he looked out over the plain and saw the soldiers flying in every direction. There was no firing, and the enemy nowhere to be seen, but evidently something serious had happened to throw the men into such confusion. The General quickly mounted and rode to the scene. There he found that the enemy was not the Afgans, but a cloud of infuriated bees which were specially active about the bare legs of the Highlanders. The great Lord promptly decided that discretion was the better part of valor in such a contest, and "like Joffre, later on," ordered a general retreat in as good order as possible. Then he made an inquiry and found that the stampede had been the result of the thoughtlessness of an officer of the 9th Lancers, who, to revenge himself of a sting he had just received, had thrust his lance into a hive of bees—instead of suffering it with the sangfroid of an English officer."

Bro. Romain.

St. Francis Xavier College, Shanghai, China.

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Managing Editor—M. G. Dadant.

Owner—C. P. Dadant, Hamilton, Ill.

Known bondholders, mortgagees, and other security holders holding one percent or more of total amount of bonds, mortgages or securities—None.

[Signed] M. G. Dadant, *Manager.*

Sworn to and subscribed before me this 2d day of October, 1916.

[seal.] T. R. Klay,
Notary Public.

My Commission expires Mar. 25, 1919.

ARMY AUCTION BARGAINS
Saddles, $3.00 up. New uniforms, $1.50 up. Army 7 shot carbine $2.55; ctges. 1½c each U. S. N. Winchester high power rifle 6mm, $9.85 Team harness $21.85 up. C.W Army Revolvers, $1.65 Remington Army Revolver, $4.85; ctges. 1c each Mauser High Power rifle with 200 ctges. $19.85 15 Acres Government Auction Goods Bargains illustrated and described in 428 large page wholesale and retail cyclopedia catalogue, mailed 25c east and 30c west of Mississippi River.
FRANCIS BANNERMAN, 501 BROADWAY, NEW YORK

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

Phelps' Golden Italian Queens will please you.

Tell several thousand people what you have for sale with a few words in this department.

Bees and Queens from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

For Sale—300 to 600 colonies of bees, in the famous Hagerman Valley where failure is unknown; very reasonable. Address,
J. E. Hanks, Hagerman, Idaho.

Phelps' Golden Italian Bees are hustlers

Vigorous prolific Italian queens, $1.00; 6, $5.00. My circular gives best methods of introducing. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

Leather Colored "Nutmeg strain" of queens, $1.00; doz., $10. Tested, $1.50. Special price on large lots. Return mail.
A. W. Yates, 3 Chapman St., Hartford, Conn.

A Little Ad in our classified columns will sell that perfectly good equipment that you no longer need, Only 15 cents per line each insertion.

For Sale—35 colonies bees, Italians and mixed, in modern hives; all in good shape for winter. For particulars address,
G. W. Fehleisen, Madrid, Iowa.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

Bees for Sale—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

For Sale—The apiary of bees belonging to the late R. A. Elliston, consisting of 240 colonies in first-class condition. Price five dollars per colony, supers included. 1½ miles south of Bureau, Ill. P. O. office address, Princeton, Ill. Mrs. Robt. Elliston.

HONEY AND BEESWAX

Wanted—Extracted honey in any lots. Send sample and prices. Ed Swenson,
Spring Valley, Minn.

Wanted—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

Comb Honey our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

For Sale—Our own crop of extracted white clover honey in barrels or cans. This is as fine quality white clover as we have ever seen. Write for prices and state quantity wanted. Dadant & Sons, Hamilton, Ill.

For Sale—Raspberry, basswood. No. 1 white comb, $3.00 per case; fancy, $3.25; 24 Danz. sections to case. Extracted, 120-lb. cases, 9c per lb. W. A. Latshaw Co.,
Clarion, Mich.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

No. 1 white comb $3.50 per case; No. 2, $3.00. No. 1 fall comb, $3.00; No. 2, $2.50; 2, sections to case. Extracted in 60-pound cans, clover, 9c; amber, 8c; amber in pails, 6, 10 pound or 12 5-pound to case at $6.00 per case.
H. G. Quirin, Bellevue, Ohio.

For Sale — Water-white alfalfa, white clover, amber alfalfa, and amber fall honey in 60-lb. cans or smaller packages. Amber fall honey is of our own extracting, and can also be furnished in barrels. Write for sample of kind desired and state quantity you can use. Dadant & Sons, Hamilton, Ill.

Queens, improved three-band Italians bred for business, June 1 to Nov. 15. Untested Queens, 75c each; dozen, $8.00; Select, $1.00 each; dozen, $10. Tested Queens, $1.25; dozen, $12. Safe arrival and satisfaction guaranteed. H. C. Clemons,
Rt. 3, Williamstown, Ky.

Honey Wanted—We are in the market for light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

For Sale—65 cols. Italian bees $4.00 per col.; 10 cols. hybrids, $3.50 per col. All from J. T. Moore's strain, and in 8-frame hive bodies in winter cases; standard full depth self-spacing Hoffman frames, 8 to each hive, all combs straight; cols. strong and healthy with stores for winter; would bunch the lot for $3.25 per col.; a few untested Italian queens, 60c each. Wilmer Clarke,
Earlville, Mad. Co., N. Y.

SUPPLIES.

The Perfect Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

Bee-Keeper, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

For Sale—One Detroit Kerosene Engine, 6 hp., used but little, as good as new. Will sell for $75; cost $95 new.
The M. C. Silsbee Co., Rt. 3, Cohocton, N. Y.

For Sale—200 10-fr. dovt. Excelsior covers. Lewis make. New but discolored. In lots of 50@25 cents each.
Dadant & Sons, Hamilton, Ill.

Q-C. hive yields, on account of its protectiveness, equable temperature, broodnest work incentive, etc., sixty pounds more than average of others. Can you afford to not test it? Address, W. F. McCready,
Box 2, Estero, Fla.

Wanted—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address,
American Bee Journal, Hamilton, Ill.

For Sale—800 new metal spaced brood-frames, No. 2 stock, nailed and wired, at $3.00 per hundred or 400 for $11. Also 100 loose hanging brood-frames nailed, No. 2 stock, at $2.50. The M. C. Silsbee Co.,
Rt. 3, Cohocton, N. Y.

SITUATIONS.

Wanted—Experienced man to work with bees, April 15 to August 15.
C. C. Parsons & Son, Bluff Springs, Fla.

Ontario Beekeepers to Meet in Toronto in December.—The Ontario Beekeepers' Association will hold its annual convention on Tuesday, Wednesday and Thursday, Dec. 12, 13, and 14, in Toronto. This later date than usual will be welcomed by the beekeepers, as the great rush of fall apiary work will be over.

A very interesting program, extremely practical, has been arranged by the executive committee. Prominent beekeepers from both Canada and United States will be present. Mr. C. P. Dadant, of Hamilton, Ill., Editor of the American Bee Journal, will take up the question of "Prevention of Natural Swarming." Mr. Dadant is an extensive honey producer, and has harvested over 100,000 pounds of honey this past season. The Dominion Apiarist, Mr. F. W. L. Sladen, in charge of the Bee Investigation work on the various experimental farms, will speak of some line of his investigations. "Beeswax Production" will be discussed by Mr. W. A. Chrysler, of Chatham, and Mr. G. A. Deadman, of Brussels, will deal with "The use of shallow supers in connection with the regular size." Comb honey has been successfully produced by Mr. S. B. Bisbee, of Beamsville, and his experiences will be valuable and interesting. Special apiary appliances will be explained by Mr. E. T. Bainard, of Lambeth, and Mr. W. J. Craig, of Brantford.

Of special interest from the social side of the convention will be the banquet on Wednesday evening, at which Mr. Couse will speak of the "Past Presidents of the Ontario Beekeepers' Association." Mr. Couse has been a member continuously since the association was organized, and for many years held prominent positions on the executive committee. His personal acquaintance with the past presidents enables him to handle his subject in a very interesting and able manner.

The program will be ready for distribution shortly, and may be had by applying to the secretary-treasurer.

MORLEY PETTIT.
Ontario Agricultural College, Guelph

HONEY AND BEESWAX

CHICAGO, Oct. 18.—The market has been active and stocks have been very much reduced since the beginning of the month

Prices are ranging at from 15@16c per pound for the fancy to extra fancy, and 14@15c per pound for the No. 1 grade Amber grades from 1@3c per pound less. Extracted, the best grades of white are bringing 8c per pound, light ambers about 7c per pound, and the dark ambers at 5@6c per pound.

Beeswax, 30@32c per pound.

R. A BURNETT & CO.

KANSAS CITY, MO., Oct. 18.—The honey market is more or less slow with us, on account of the large amount of native honey which has been placed with the grocery trade in this and the surrounding markets.

Fancy white comb honey, 24 section cases, is jobbing at $3.00 per case; No. 2 at $2.75 per case. There is quite a little poor honey coming to this market.

There is a fairly good demand for extracted honey at 8½c a pound for the white clover, 8c for the western light alfalfa, and 6@7c for dark southern honey.

C. C. CLEMONS PRODUCE COMPANY.

SAN ANTONIO, Oct. 17.—Wholesale prices on bulk comb and extracted honey continue very firm and stocks are light. No carlots are being offered. Local offerings by producers in drop shipments qualities are, bulk comb honey 9c basis, and extracted 7c basis. In and near points where large bodies of National Guard are mobilized honey is readily brinigng as high as 10c per pound, extracted basis. Beeswax prices are firmer, 27c cash to 30c exchange, being offered by dealers.

SOUTHWESTERN BEE CO.

CINCINNATI, Oct. 16. —The demand for comb honey is not as good as it was last season. We are selling No. 1 comb honey, 24 sections to the case, at $3.75 per case; lower grades are not wanted at any price. White clover extracted honey in 60-pound cans at 7½@9c. Amber extracted in barrels from 6½@7½c. The above are our selling prices, and we buy at less than the above prices.

We are paying 28c a pound for choice bright yellow beeswax.

THE FRED W. MUTH COMPANY.

NEW YORK, Oct. 18.—The new crop of honey from nearby is now beginning to arrive in small lots, but the market is still unsettled, and prices are not firmly established. We are of the opinion that comb honey will sell as follows:

Number 1 and fancy white, 14@15c; No. 2 and amber 12@13c; buckwheat and dark, 10@11c. Extracted white clover, 7@7½c; light amber, 6½@7c; buckwheat, 6½@7c, and West India honey continues to arrive quite freely and prices are ranging from 58@62c per gallon, according to quality.

Beeswax is selling at 30@31c for domestic and 28@29c for West India.

HILDRETH & SEGELKEN.

DENVER, Colo., Oct. 19.—We are selling new crop comb honey in the local market at the following jobbing prices; Fancy, per case of 24 sections, $3.38. No. 1, $3.15; No. 2, $2.93. White extracted, 8½@8¾c per pound; light amber, 8@8¼c per pound, and amber 7@8c per pound We pay 26c per pound in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.

THE COLO. HONEY PRODUCERS' ASS'N
F. Rauchfuss, *Mgr.*

Lyon & Healy–Chicago
(The World's Largest Music House)

Semi-annual clearing sale of used pianos at cost—realizing prices. Write today for complete price-list. Pianos guaranteed and shipped on approval at our risk for all expenses. Good Upright pianos, $75, $100, and $125—better pianos, slightly used, $150, $175, and $200 and upward. Fine used Baby and Parlor Grand Pianos, $300, $325, $350, $375 and $400. Cash prices to every one alike, but easy payment terms at simple interest to suit your convenience.

Refer to any bank, merchant or to the American Bee Journal, which please mention when answering this advertisement.

LYON & HEALY, CHICAGO, ILLINOIS

HONEY JARS

25 1-pound screw cap flint glass jars; 1 gross crates, $4.75. Discount on quantities. We carry several styles of jars.

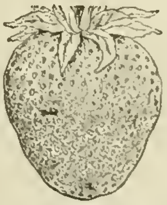
Light honey, clover flavor, two 60-pound cans, 9 cts. per pound. Sage honey, 9¾ cts. per pound. Sample, 10 cts. White comb honey.

Catalog of bees and supplies free.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

Biggle Bee Book.—This is a very small cloth-bound, well gotten up book. Its size is 4x5½ inches, and it was designed to be carried in the pocket of the amateur beekeeper. It contains concise information regarding the best practice in bee culture. Price, by mail, 50 cents, or with the American Bee Journal one year, $1.35.

"ROUGH ON RATS" ends **RATS, MICE,** Bugs. Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. **Economy Sizes 25c. 50c** Small 15c. Used the World Over. Used by U. S. Gov **Rough on Rats Never Fails.** *Refuse ALL Substitutes.*



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Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

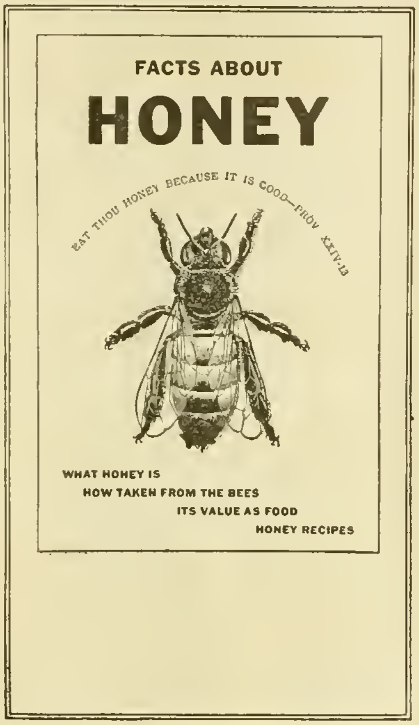
Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

A Modern Bee Farm, by Samuel Simmins. The author is a live English beekeeper. He has kept up with the progress in this line not only in his own country, but all over the world. His views are determined, but very well taken, and his points are made with an accuracy which is convincing. Cloth bound, 470 pages. Price, postpaid, $2.00, or with the American Bee Journal, both $2.75.

FACTS ABOUT HONEY



FACTS ABOUT

HONEY

EAT THOU HONEY BECAUSE IT IS GOOD—PROV XXIV-13

WHAT HONEY IS
HOW TAKEN FROM THE BEES
ITS VALUE AS FOOD
HONEY RECIPES

THE editorial on the "Food Value of Honey," on page 404, of the December American Bee Journal was so highly appreciated, and so many enquiries came for a reproduction of it in pamphlet form that there was prepared a 16-page booklet for advertising honey containing this and other matter of importance which the consumers ought to know. Size of booklet 5 3-4x9 inches. Weight a scant ounce.

"Facts about Honey" contains the following information illustrated with 17 splendid half tones: What honey is and where gathered; Principal kinds of honey; Different flavors and colors; How produced; Bee-trees and bee hunting; Bees in boxes and gums; The new way of honey production; Movable-frame hives and sections; Comb honey; Comb foundation; Why the bees build straight in the section; Chunk honey; Extracted honey, the honey extractor and manner of extracting; Purity of honey; Granulation of honey, how to melt it; Food value of honey; Is honey a luxury; Honey as health food; Uses in cooking; Fifty recipes for use of honey.

On the last page room enough is left to print the beekeeper's name and the prices he asks for his honey. Or the address may be printed on the front cover page. At the bottom of the last page there is also room to address the booklet to the consumer, after folding it so that no envelope is needed. A gummed "Eat Honey" label or wire clasp is sufficient to hold it together for mailing.

We will furnish these pamphlets at unprecedented low prices, as follows:

Single copy as sample, free.		500 copies, postage extra -	$ 5.00
Less than 30 copies, postpaid, each $	.03	1000 " " " -	9.00
· 30 " " -	.75	2000 " " " -	17.00
50 copies, postage extra -	.75	5000 " " " -	40.00
100 " " " -	1.25	10,000 " " " -	75.00

For parcel-post shipment, the weight is about 6 pounds per 100 copies.

Printing name and address of producer, with brief price-list of honey on either front or back page: 500 or less, $1.00; 1000 or more, $1.50 per thousand.

The pamphlet contains no advertising or address of any kind and is distinctly a positive, unbiased and clear explanation of the usefulness of honey, intended for a reply to the numerous questions usually asked by the uninformed consumer. Send your orders to

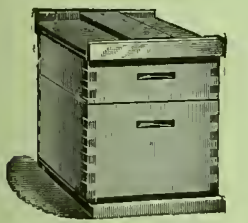
American Bee Journal, - Hamilton, Illinois

MARSHFIELD GOODS

BEE-KEEPERS :—
We manufacture Millions of **Sections** every year that are as good as the best. **The CHEAPEST** for the Quality ; **BEST** for the Price. If you buy them once, you will buy again.

We also manufacture **Hives, Brood-Frames, Section-Holders and Shipping-Cases.**
Our Catalog is free for the asking.

Marshfield Mfg. Co., Marshfield, Wis.



EARLY ORDER DISCOUNTS WILL
Pay You to Buy Bee-Supplies Now
Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.
LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

START THE SEASON RIGHT

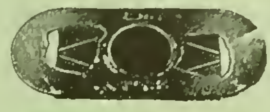
By using **Dittmer Foundation** the bees like it for it's made to just suit them, and is just like the Natural Comb they make themselves.

Send for prices on having your Beeswax made into Comb Foundation, which includes all freight charges being paid.

All other Supplies in stock

Gus Dittmer Company, Augusta, Wisconsin

PORTER BEE ESCAPE
SAVES
HONEY
TIME
MONEY



For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.
Please mention Am. Bee Journal when writing

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Successor to Northwest Farm and Home
69 YEARS OLD
If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

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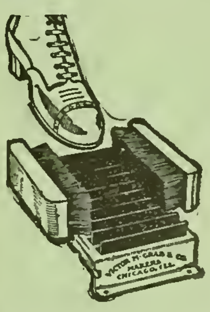
Write us for our 64-page catalog. FREE. Full information given to all inquiries. Let us hear from you. We handle the best make of supplies for the beekeeper. Beeswax exchanged for supplies or cash.
J. NEBEL & SON SUPPLY CO.,
High Hill, Montg. Co., Mo.

OUR VERY BEST IS THE VERY BEST
BEE SUPPLIES
Best Sections, Best Shipping Cases
Best of all Supplies
Best prices you will get for your honey when put up in our sections and shipping cases. "LOTZ" sections and shipping cases have stood the test. Why? Because they are perfect in workmanship, quality and material. Buy LOTZ goods when you want the BEST. Our 1915 catalog ready now. Send your name and get one.
H. S. DUBY & SON, St. Anne, Ill., carry a full line of our goods.
AUG. LOTZ CO. BOYD, WIS.

GET A FOOT SCRAPER WITH YOUR RENEWAL



We still have a small stock of foot scrapers like cut on hand. Although these scrapers cost, postpaid, $1.00, we will send them out while they last together with a year's subscription to the American Bee Journal; both for $1.50.
Postage, 15c extra. Address,
AMERICAN BEE JOURNAL
Hamilton, - - Illinois

Lumber That Lasts?

Here's a Convincing Case of an Experienced Beekeeper Who

(but let the gentleman tell it himself):

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

BUCK GROVE, IOWA, February 2, 1916.

"I have been a Cypress man for lo, these many moons. Almost all my dovetail hives are of Cypress, as are bottom-boards, and I think, shallow telescope covers. My hive stands are of Cypress, and stand in the mud and wet all the time and are as solid as when I got the first one some years ago. Cypress is a trifle heavier than white (cork) pine, but not much more than the heavier grade of Pine now used. The fact that it is 'everlasting' compensates for all this."

(Signed) A. F. BONNEY, M. D.

For a job of repairing or for equipment, the lumber that will give you the greatest real investment value in the market is Cypress, commonly known as the "Wood Eternal." This wood does not rot down like most woods; it lasts and lasts, and LASTS, and LASTS and LASTS. It is the Gopher Wood of the Bible—Noah built his ark of Cypress. Since the days of Noah, Cypress has been famous for endurance under the most trying conditions. **Cypress is the one certified Greenhouse Wood. That's "Some" test. Bottom-boards are another.**

GET A BOOK—IT IS FREE

There are 41 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't. Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for Building; Vol. 36 is the Carpentry Book making easy a dozen hard jobs of carpentry; Vol. 19 is the Canoe and Boat Book; Vol. 37 is the Silo Book. All are free for the asking. Suppose you ask for one or a dozen, right away.

WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "All-round Helps Department."

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., or
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DON'T FUSS

With your old combs and cappings, but send them to us. We will render them into beeswax for you on shares and pay you cash for your share, or we will make same into

DADANT'S FOUNDATION

for you. If you prefer, we will pay you our best trade price in exchange for BEE SUPPLIES.

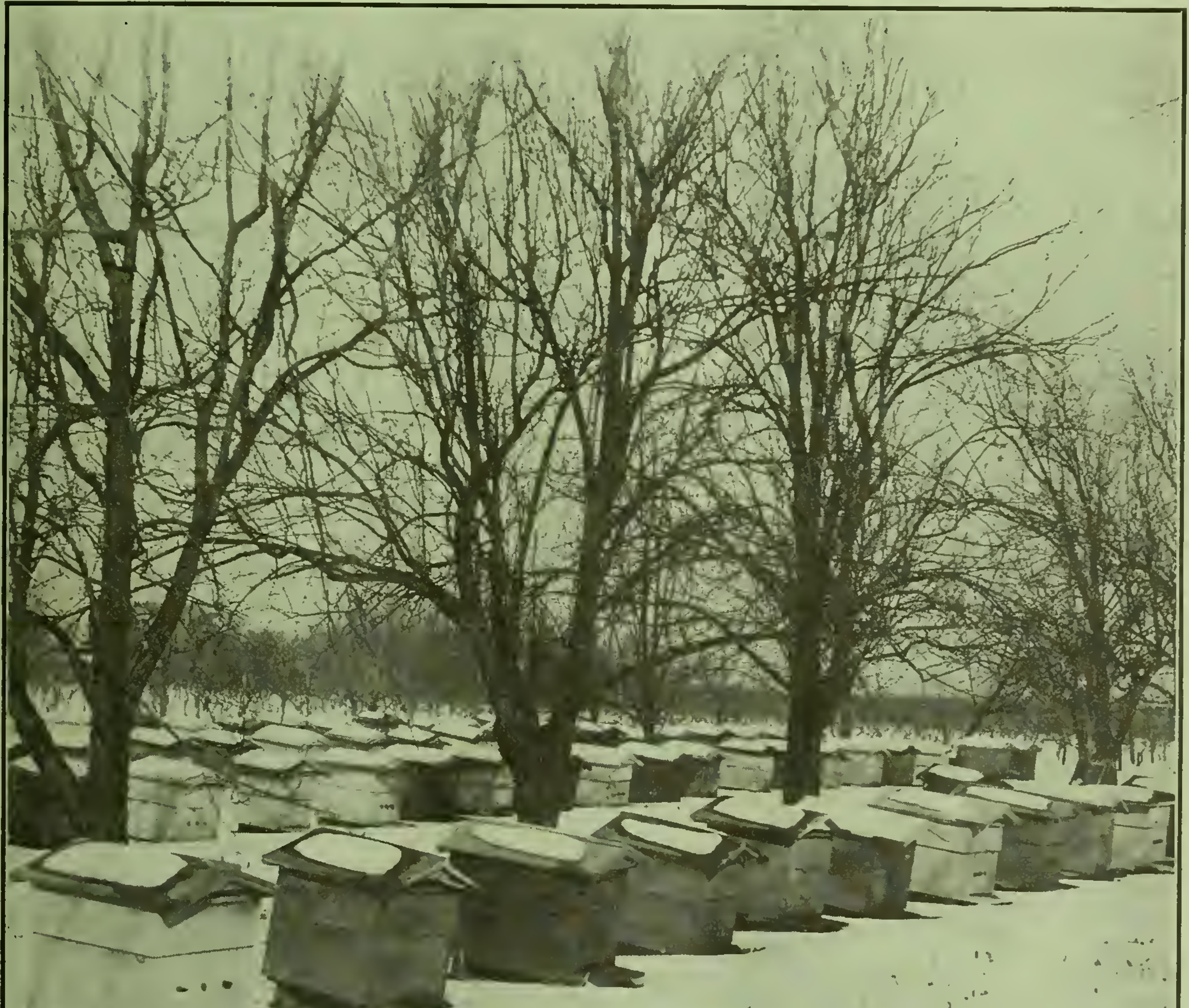
Send for our terms. We feel sure that we can save you some money besides saving you a "mussy" job.

BEESWAX WANTED AT ALL TIMES

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

DECEMBER, 1916



Snug for Winter. Double Walled Hives With Tops Packed With Leaves.
Apiary of E. J. Baxter, of Illinois

40 DAYS TRIAL
12 Years Guarantee
165 Egg Incubator
Only $10

NATIONAL Gets Big Hatches

Peter Kilpatrick, Nazareth Pa., writes, "Have made better hatches than anyone here." **Money cannot buy greater hatching value.** Hot water heat—double wall—dead air space—asbestos lining—self regulating—ventilating—double glass doors—safety lamp—egg tester. **No extras to buy**—easy to operate—will not warp or shrink. Strongest, most durable Incubator made.

Freight Paid East of Rockies

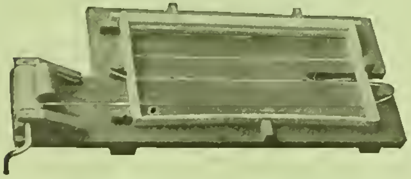
Take no chances. The National is built on U.S. Government specifications. A proven cold weather hatcher. The World's Greatest Incubator Bargain. Send postal today for **Free 1917 Catalog And Poultry Book**—worth dollars to every poultry raiser—or order direct from this ad and save time. **Incubator and brooder both prepaid $12.50.** Comes set up ready to run, with book of instructions. You take no risk, **satisfaction guaranteed or money refunded.** Don't delay. Send for Poultry Book today sure.

NATIONAL INCUBATOR CO.
Box 116 Racine, Wis.

SOMETHING NEW

Watch this space the coming season for something new in the way of bees by the pound. Three-banded Italians, resistant to European foulbrood, Isle of Wight disease and paralysis. Golden Italians that are golden and good honey gatherers. All orders filled promptly past season, and expect to double capacity of Queen-yards to meet growing demand.

H. D. MURRY, Mathis, Texas



WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2 00.

G. W. Wright Company, Azusa, Calif.

BARNES' Foot-Power Machinery

Read what J. f. Parent o Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

Bees and Queens for 1917

GOLDEN AND LEATHER COLORED

We are now booking orders for April, May and June, 1917 deliveries at the following prices, viz.:

Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen-

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

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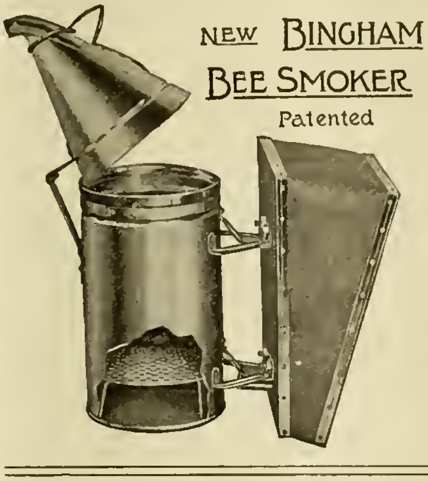

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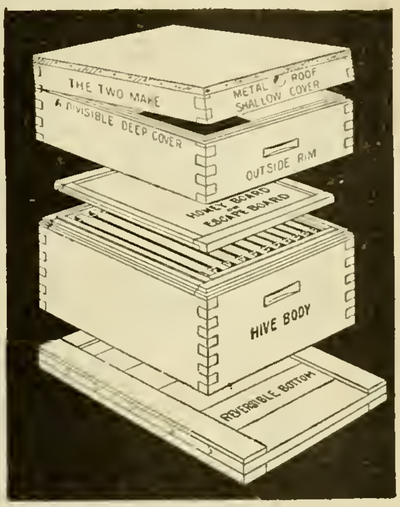

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A. Hugh Bryan, formerly connected with the Bureau of Chemistry, Washington, D. C., and who at the time made a speciality of honey, has written the articles dealing with the chemistry of honey, glucose, invert sugar, nectars, adulterations, etc. He has also written a special article for the benefit of chemists, on how to analyze honey.

Since the introduction of artificial invert sugars, new methods have to be employed; and these are set forth in this new edition so that any chemist will be able to use the very latest information that has been available to the Bureau of Chemistry, Washington, D. C.

BEE BOTANY

This is being handled by John H. Lovell, of Waldoboro, Maine, a beekeeper, botanist, and an entomologist. Some new species have been added, and in other cases the descriptions have been made more complete.

PRACTICAL ARTICLES

These have been revised and rewritten by the editors of GLEANINGS. All the latest methods of management have been incorporated. Articles on bee diseases have received entirely new treatment, especially those relating to European foulbrood and the Isle of Wight disease.

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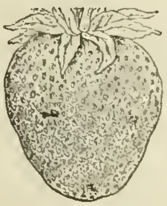
[Signed] M. G. Dadant, *Manager.*

Sworn to and subscribed before me this 2d day of October, 1916.

[SEAL.] T. R. Klay,
Notary Public.

My Commission expires Mar. 25, 1919



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AMERICAN BEE JOURNAL

Vol. LVI.—No. 12 HAMILTON, ILL., DECEMBER, 1916 MONTHLY, $1.00 A YEAR

HABITS OF THE WAXMOTH

Facts About the Pest Which is Most Feared by the Beginner and Most Easily Controlled by the Expert Beekeeper

HOW often it happens that the thing which we most fear when viewed from a distance proves to be the source of little anxiety on closer acquaintance! It is just so with the waxmoth. It seems to be the pest which is most feared by the beginner and the novice, and which is most easily controlled by the expert beekeeper. In the four years which the writer has spent as a bee-inspector, he has visited dozens of apiaries where the bees receive no attention further than to put on supers in spring and to remove them in the fall. Such apiaries are subject to all the vicissitudes of short stores, queenlessness, disease, poor wintering, and the hundred other things that may befall neglected bees. When the bees die from any cause, the waxmoth enters the hive, as a matter of course, and shortly the combs are destroyed. The unfortunate owner then charges all his loss to the moth. Time and time again has the writer been told of losses from this cause, often the last colony having been removed, disgracing its careless owner, who is entirely unworthy to be called a beekeeper.

The presence of waxmoths indicates one of two things, either carelessness or ignorance on the part of the beekeeper. The best beekeepers at times find moths in a weak colony which has been overlooked in the rush of the season, or possibly in a super of extracting combs which have remained unprotected for too long a time. This can be charged to carelessness. The novice often fails to recognize the symptoms of queenlessness, disease or other abnormal conditions until the colony has become weakened to the point where the moths take possession, hence he lays all the trouble to the moths, when the moths are an indication of some disorder which was present previous to their coming, rather than the real cause of the disaster to the bees. In short, the presence of waxmoths is an indication of poor beekeeping.

LIFE HISTORY OF THE PEST.

Figure 1 shows the adult moth, life size. As will be seen by the picture, it is a grayish moth or miller with little to distinguish it from hundreds of other moths, whose larval stages are very different.

Moths, in common with butterflies, beetles, bees and many other insects, pass through four stages in completing their development, or what is called the complete metamorphosis. The first stage is the egg. The second stage is the larva, and it is during this stage that the damage is done to the combs within the hive. The third stage is the pupa which is passed within the cocoons shown at Fig. 4. The fourth and last stage is the mature moth, shown at Fig. 1.

The moths are quiet during the day and fly at night. The female will slip into the entrance of the hive, or any crevice that chances to be open. The eggs are laid in crevices about the hive, behind the division-boards or other out of the way corners, where the newly hatched larvæ will find easy access to the combs. The mother moth seeks a protected situation for her eggs, and glues them firmly to their resting place. A single moth will lay hundreds of eggs, extending over a period of a week or more. When first hatched the larvæ are very small and white. They burrow at once into the combs and, as they increase in size, will make such tunnels through the combs as are shown at Fig. 2.

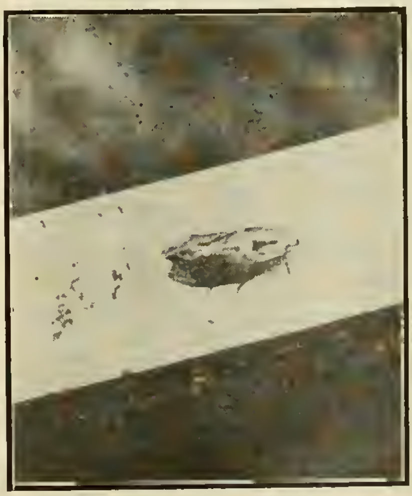

Fig. 1.—Adult Waxmoth

Probably hundreds of eggs are laid in nearly every beehive in the temperate regions of North America every summer, yet the finding of a well grown moth larva in a strong colony is not common. The bees either remove the eggs, or drive out the worms shortly after they are hatched. The moths are so very prolific that when they get a start, the colony is doomed, since the bees are unable to remove them from their webs, once they become established. The moths feed as much on the pollen stored in the cells as on the wax from which the combs are built. New extracting combs that have never been occupied for brood-rearing are not very attractive to them, and will not be destroyed as long as old combs are within reach.

Figure 3 shows the larvæ, which are repulsive white caterpillars, in their burrows in the combs. The length of time required to complete the larval growth varies from 35 to 45 days depending upon weather conditions or season, according to Prof. Paddock who has studied the habits of the insects closely. The larvæ are about an inch in length when they reach maturity and are ready for spinning the cocoons.

Figure 4 shows a mass of the cocoons along a top-bar. The cocoons are fastened in masses between the top-bars, under the cover, or in any easily reached situation which offers suitable protection. In warm weather the change from a larva to a mature moth takes place in about two weeks.

In warm climates the insects probably breed with little interruption, while in the north there are several months when their work is checked. They are sensitive to cold and combs exposed to severe freezing will be free from waxmoths in the spring. Such individuals as find a crevice near the cluster of bees survive the winter, and renew the cycle the following season.

These insects have a very wide range and may be found nearly everywhere in Europe or America where bees are kept, excepting in the high altitudes of the West. When the writer visited Denver a few years ago he was informed by beekeepers there that the moths did not seem to survive in that climate. Although several times introduced, they soon disappeared. It is fortunate for the beekeepers of Colorado and other similar altitudes that they have one less source of irritation.

The writer is inclined to regard the waxmoth as a blessing in disguise, for it certainly tends to discourage careless beekeeping. A set of good brood-combs is worth at least two dollars, and it stands the beekeeper in hand to look after weak or queenless colonies to prevent the moths from destroying them. If left undisturbed, the moths destroy the combs entirely so that nothing remains but a mass of webs and the casts of the larvæ. Even the frames will be so badly eaten by the larvæ in spinning their cocoons that they are of little value.

CARE OF COMBS, ETC.

It is seldom safe to leave extracting combs exposed for any length of time. As soon as possible after the honey is extracted the combs should be returned to the bees, unless freezing weather is at hand. If for any reason it is not desirable to return the combs to the bees at once, they should be exposed to fumes of bisulphide of carbon in an air-tight room. Care should be used that no lighted lamp or other flame comes near, as the gas is very explosive. Some beekeepers have a tight room lined with building paper for storing combs. They are kept in the supers and piled up six or eight high, and a sponge or cloth saturated with the bisulphide of carbon placed on top of each pile. The door is then shut and the combs allowed to remain until needed for use. The drug effectively destroys any moths that may be present, and the tight building prevents adult moths from again laying eggs in the combs.

Another and very cheap method of destroying the moths in a room consists in burning brimstone. This material is sold by druggists in properly prepared packages supplied with a wick in a small metal dish, and the only requirement is to place it in some safe position over a plate or crock containing water and burn enough of it to kill the flies in the room. The room of course must be made as air-tight as possible, or the fumes of the burning brimstone would evaporate without killing the moths and their larvæ. As the eggs will not be destroyed by these methods of asphyxiation, it is well to repeat the dose after a few days. There is no danger of explosion with brimstone, the only requirement being to avoid setting anything afire, and that is why we recommend placing the burning brimstone over a dish of water.

Most beekeepers make a practice of leaving all extra combs on the hives until October. Even though there are two or three sets of empty combs above a strong colony of bees, there is little danger that they will permit the moths to injure them. When they are removed to prepare the bees for winter, the cold will prevent later injury, and if they are kept in a moth-tight room until needed the following season they will be safe.

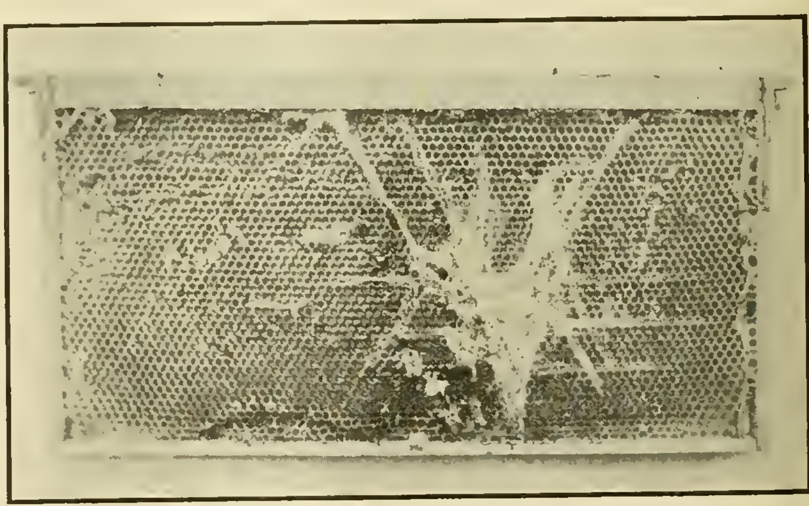
FIG. 2.—TUNNELS OF THE WAXMOTH IN AN EXTRACTING COMB

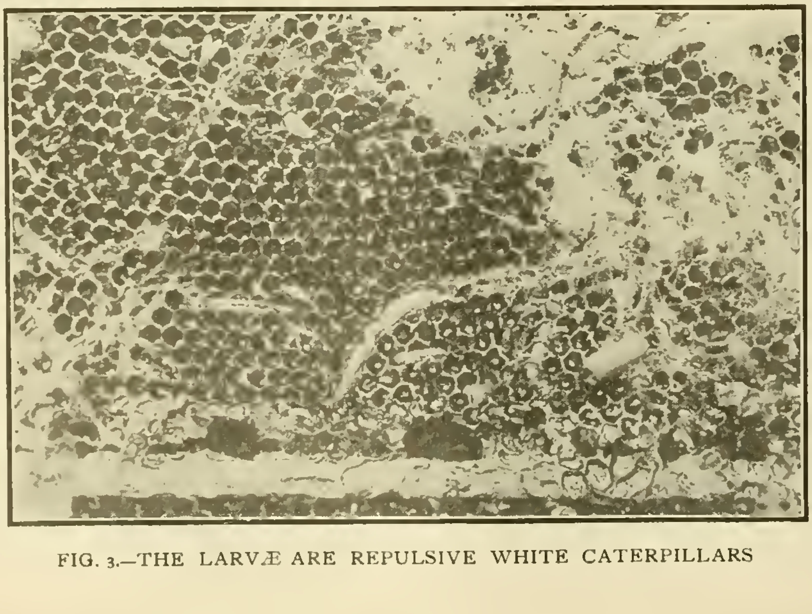
FIG. 3.—THE LARVÆ ARE REPULSIVE WHITE CATERPILLARS

Selling Honey—What Points to Emphasize

BY E. M. COLE.

FOR 22 years my constant study and recreation has been the busy bee. It was during these years that I learned just how to spread brood to the greatest possible extent, with th least possible danger to the brood, and the smallest possible amount of manipulation, but until the last three years I had never paid much attention to the commercial side of the business.

Now beekeeping begins to appeal to me as a splendid vocation as well as a recreation. I have increased my apiary until with fair wintering and an average honey flow, the disposal of a crop will be a live question. I have thought and planned considerably on marketing, and with the ideas gained from the sale of my small crops the past two years, I think I can offer some help on the subject, especially on local sales.

An effort is being made through the domestic science classes in our schools, to encourage the use of honey in baking, and this may lead to the use of a large amount of honey in the aggregate, but only a comparatively small amount locally. Another opportunity along this line, which might increase the aggregate sales, is its use in pancakes. The sale of prepared pancake flour has reached enormous proportions, and on each package is a recipe for making, which usually advises the use of a spoonful of sugar or molasses to make them brown. No doubt those who are directing the campaign for the greater use of honey, could induce the makers to include honey in the recipe.

Another chance for increased sales is through the people who are constantly on the road giving demonstrations in all kinds of baking. A baking powder crew was here this summer and drew a crowded house every day for a week, and I know there was an instant demand for every article they used in their recipes, but not one recipe called for honey. One of their number informed me that the matter had been taken up at headquarters, and no doubt they would be instructed to use a honey recipe. These things may greatly increase the general use of honey, but I want to dispose of my entire crop locally, and I think I can solve the problem.

Considerable has been written about the value of honey as a food for children, but I think a little inquiry will convince you that most children are not very fond of honey, and their appetite for it is quickly satisfied; it doesn't furnish the growing child with the elements it most needs, something for growth of bone and muscle. The one person to whom I believe honey is of the most value as a food is the hard working man or woman who has reached or passed middle age. I believe there is a sound reason for this, and it is with this class of customers that I believe the local market for extracted honey, if offered them at a fair price, may be enormously increased.

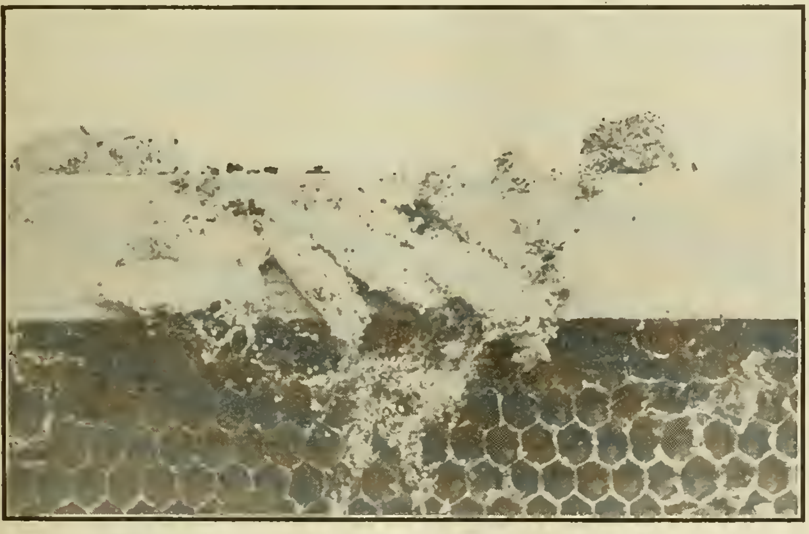
FIG. 4.—THE COCOONS ARE PLACED BETWEEN THE TOP-BARS AND UNDER THE COVER

People at this age have lost some of their power of recuperation; their digestion is not what it once was, and digestion as well as labor is a tax on their energy. For them honey is one of the best foods; it is easily assimilated, and with so slight a tax on the digestive organs, furnishes them with what they most need, force or energy, and heat, and they soon acquire what almost amounts to a craving for honey. They might see it on exhibition every time they enter a store and not be inclined to buy, and I believe as a sound business principle I would rather give them a 5-pound pail of honey to get their appetites started than to sell an equal amount to a domestic science class or demonstrating crew.

Another point: If you live in or near a community of foreign born people, pay them special attention and you will find them your best customers; they are usually familiar with and appreciate extracted honey, and often prefer the darker grades.

[The foregoing article has excellent suggestions. There is an increase in the demand for honey, evidently due to the increased advertising by the beekeepers generally. The leaflet, "Facts About Honey," which is being given away in tens of thousands to the consumers, is helping greatly. This agitation should be continued until honey becomes a staple and an article of daily consumption.—EDITOR.]

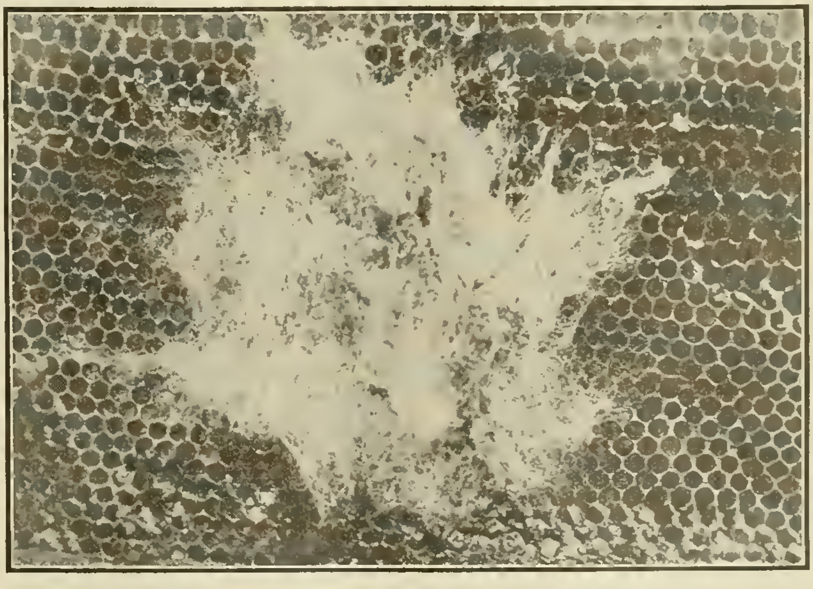
FIG. 5.—IF LEFT UNDISTURBED, THE COMBS WILL BE ENTIRELY DESTROYED AND NOTHING WILL REMAIN BUT THE WEBS OF THE WAXMOTH

The Action of Naphthalene on Insect Life

BY A. F. BONNEY.

LAST season I found that naphthalene repelled insect life (moths) from hives, and that it seemed to kill the moth larvæ, but I was puzzled to find that the bees were, or seemed to be, immune, that a strong odor of the drug would not drive them away from honey or injure them. An editor jumped to the conclusion that naphthalene will not kill bees, notwithstanding that it is reputed to be "deadly to most insects."

This season I took the first opportunity to investigate. I find that bees, the wax moth, flies, and some beetles shut up for a time in a place where the odor of the drug is persistent, will surely die, but allowed to come and go, bees will fly about a hive in which there is a smell of naphthalene and live.

Now the philosophy and toxical chemistry of the matter is this: Naphthalene is quite volatile, and the warmer it gets the more of the drug there is suspended in the air. Insects shut up with the stuff will become covered as soon as the interior of the box cools, even the inside of the breathing tubes will be coated. This means death. In the same way the worms and cocoons are covered, the poison is absorbed and the insect dies. I thought there might be a mechanical effect, that the insect was coated with an air-tight cover of the drug, but this is not likely.

Its repelling property is, I think, due entirely to its odor, and coal tar creosote, formaldehyde or phenol would give the same result. Bees will fly freely in quite a strong odor of the bisulphide, as others have, no doubt, noticed.

That naphthalene will kill the moth larvæ I now have no doubt, and I keep some in all stacks of hives. A handful of the powdered stuff is all right, and will make a very dense atmosphere.

Buck Grove, Iowa.

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THE EDITOR'S VIEWPOINT

Texas Honey Producers

Another step was taken Oct. 21 in the organization of the association of Texas honey producers. About 17 counties were represented and about $9000 of stock subscribed. They expect to get the full amount of the $25,000 subscribed by Jan. 1, when they will obtain their charter. The organization is to be along the lines of the Citrus Growers' Association of California.

The list of directors and officers of this association has been given in our August number, page 265. At the October meeting "a committee was appointed to wait on members of the State legislature to influence that body to appropriate money for an apiary to be operated in connection with the State Experiment Station at College Station, Tex. The federal government will appropriate an amount equal to that set aside by the State for this work. The members of this committee are Henry Brenner, of Seguin; T. P. Robertson, of Bartlett, and B. I. Gilman, of Pearsall.

"Considerable data was submitted at the meeting to show the vast possibilities for the expansion of the honey-producing business in Texas. It was brought out by figures submitted by local beemen that nearly $200,000 worth of honey of this year's crop has been sold in San Antonio's trade territory alone, and that Texas honey is being bought not only by all of the largest cities of the north and east, but by Europe and South America."

It is to be hoped that the beekeepers of the State will unite to help this move along.

Apples Next

Sunkist oranges have been before the public for several years past. Meadow-Gold Butter has received national advertising. In a recent issue we told of the tremendous campaign that the dairy interests are about to undertake. Now the announcement comes that the apple growers of the Pacific northwest will undertake a national campaign of advertising for their apples, which will be marketed under the name "Skookum" brand.

We are looking for an association of beekeepers who will follow the lead of the orange growers, the dairymen and the apple raisers. It is said that the apple men first tried a preliminary advertising campaign in New York, expending $15,000 there with such encouraging results that they have subscribed $50,000 for a national campaign to popularize Pacific coast apples. It would seem that New York apples must be equally good, and thousands of barrels of fine apples are grown within a few hours' ride of New York City. In spite of this fact the men from the Pacific coast are shipping apples thousands of miles and getting the cream of the market under the eastern apple grower's nose.

It will not be possible to advertise honey nationally by volunteer subscriptions. Such a campaign is only possible when organized on a business basis. An association of beekeepers with honey to be sold under an association brand, with each beekeeper to contribute to the advertising cost in proportion to the amount of stock which he holds in the association can make it go. Every man who contributes to such an advertising campaign will profit by the increased price which his honey will bring as a result of the demand for the particular brand of honey which the advertisements have called to public attention.

If such advertising did not pay, the Root Company would not continue to increase their advertising appropriation. There is no question but that their advertising is helping the general market for honey while at the same time making a profit for the Root Company because of the increased demand for Airline products.

Seventy Years of Beekeeping

It is doubtful whether our younger readers appreciate how much progress has been made in the honey-producing industry during the life time of men still active in the pursuit. Our senior editor, C. P. Dadant, has spent nearly all his life in a beekeeping atmosphere. His father, the late Charles Dadant, was an investigator who became well known on both sides of the Atlantic, and whose writings have been translated into several languages. As a young man our editor was associated with his father in honey production, and assisted him in the many experiments which he conducted in his efforts to make beekeeping a practical business.

We feel that a review of the development of beekeeping during the past 70 years, by one who has kept in such close personal touch with the men who have been actively engaged in it, and who has spent a life-time in practical apiary work, should be of more than ordinary interest. A series of five articles covering the subject will begin in the January number of this Journal. We believe that our younger readers will find this series both interesting and helpful, and that our older ones will recall many a bygone day in reading it. F. C. P.

Southern-Bred and Northern-Bred Queens

The question is frequently asked, "Are southern-bred queens as hardy as northern-bred?" It is well known that in general each region has plants and animals adapted to its particular climate and locality, and those of tropical regions do not well endure the rigors of the far North. So it is natural to suppose that bees in the South become less hardy. But characteristics do not change over night, and if bees become less hardy in the South it would be only through a long course of years. Even if a southern breeder should have stock that had been bred in the South for a hundred years, if there was any suspicion that it had become less hardy, it would be the work of a few weeks at most to have that stock entirely changed through getting one or more queens from the North.

So the usual reply that queens reared in the South are just as hardy as those reared in the North may be counted correct for all practical purposes. [In addition we may say that the Italian bees, which are hardy, are from a country with a warm climate. It freezes but little in any part of Italy, and the climate is certainly less severe than that of Texas.—EDITOR.]

The beginner is generally puzzled to know whether to choose goldens, bright 3-banded, or leather-colored. Let it be distinctly understood that all goldens are not exactly alike, neither are all leather-colored. The three kinds mentioned are all Italians, and they all vary. So a man may have a colony of goldens and a colony of leather-colored, and the goldens are the better of the two, while another may find that his own goldens are not so good as his leather-colored. The matter of looks has no small bearing, and breeders find that other things being equal the brighter the color the better customers will be pleased. Yet a large proportion of experienced producers of honey seem to prefer the leather-colored, with the belief that in general these rank as the better honey-gatherers. C. C. M.

Bees and Fruit

The "American Fruit Grower" in October, page 34, has this to say about the usefulness of birds and bees:

"Do you know what the birds and bees do for horticulturists? Here are hints. In Massachusetts, it is estimated, that the birds eat 21,000 bushels of injurious insects daily. In Tennessee, an orchardist writes: 'I have noticed that when a fruit tree was in bloom, during a damp, cool spell of weather, and the bees did not get to fly very much while the tree was in bloom, that the tree did not have very much fruit on it that year.'

"These States are mentioned because we happen to have the simple facts handy. The help of bird and bee is the same in every State. Are you taking advantage of this friendly service given by Dame Nature?

"Consider the bees, if you had to take a brush and fertilize all your fruit blooms, wouldn't it be a job? Yet here is the busiest spirit in the universe, whose whole social life, structure, and ideal, is to gather honey and pollen, thus carrying fertility to plants. Are you using the bees? Of course, wild ones will do their utmost, but why not have your own hives in the orchard?

"Of course we know, as you have already thought, that birds peck cherries, and bees sting grapes and apples, and hawks steal chickens. But Nature does not work perfectly. She needs help. Moreover, we doubt whether the damage done is one-tenth what these creatures save us. Last of all, it is a far easier task to protect fruit and seeds and chicks against bees and birds than against insects and mice."

Will the "American Fruit Grower' permit us—while applauding his wise remarks on the usefulness of bees for the fertilization of fruit—to protest against his statement that "bees sting grapes and apples." In the first place, if bees did "sting" grapes and apples, they would at the same time poison them, for the sting of the honeybee is so constituted that it emits poison whenever it is used. But perhaps our friend the "Fruit Grower," only means that bees bite or puncture the skin of those fruits with their jaws. If this is what he meant we call his attention to the fact that the mandibles of the honeybee are unable to cut the smooth skin of healthy fruit, for they are made of a smooth, horny substance which cannot pierce the skin of fruits. It is true that they tear cloth, paper and other similar articles, even tearing wood, when it is old and soft. But they do not cut these substances. They take hold of minute projecting particles and pull them until the texture is more or less lacerated. This may be readily ascertained if a string is placed within the hive. In a short time it is pulled to shreds. But the skin of grapes and apples is smooth and firm, and that explains why the bees have no means of perforating it. The damage is originally done by birds or wasps.

How do we know it? By experiment. Any one may try it. Place a bunch of perfectly sound grapes or a sound apple within a hive and examine it 24 hours afterwards. In some cases the fruit may be left for weeks and will remain uninjured if it does not decay. The writer has actually starved bees on a bunch of grapes.

The reason why so many people imagine that bees injure grapes is that, when the grapes have been punctured by birds, at daylight, the bees come later to gather the remnants. When the owner of the vineyard appears, the birds have flown away, but the little bees remain, without fear, and are accused of the mischief.

Freight Rates Again

In our June number we warned our readers that unless more care was used in packing honey for shipment the freight rates would be increased. However, we were not expecting such immediate action on the part of the railroads nor such a high rate as shortly went into effect in western territory. Beginning Sept. 1, comb honey was raised to double first-class rate in the western classification. This rate practically shuts the man in remote sections of the West out of the eastern market unless he is prepared to ship in carlots which carry a lower rate.

There was a very general protest and a hearing was arranged in Chicago for Oct. 26. At the urgent request of Iowa honey producers, who were affected by the new rate, Mr. Frank C. Pellett, our staff correspondent, was sent to Chicago to represent the Iowa beekeepers. Iowa is fortunate in having a State commerce counsel, whose duty it is to assist the shippers in that State in presenting such matters to the railroads and to the interstate commerce commission and other bodies having authority over rates. So Mr. Dwight N. Lewis, assistant counsel, of DesMoines, also went to Chicago to represent the Iowa people.

Prof. Francis Jager, president of the National Beekeepers' Association, made the trip several days in advance of the hearing, and did what he could to influence a favorable decision on the part of the committee, though he did not remain for the hearing. Mr. E. J. Baxter, president of the Illinois Beekeepers' Association, and Mr. J. T. Calvert of the A. I. Root Company, both were present at the hearing.

During the hearing it developed that there has been a very large amount of loss of honey in shipment during the past few months, and the railroads were compelled to raise the rates to enable them to pay the numerous claims for damage.

The Iowa shippers had a large amount of evidence to show that where shipments have been properly protected the loss was very slight, and this was borne out by the Root Company, who have shipped millions of pounds with very little damage. The committee seemed to wish to be entirely fair in the matter and agreed that the shipper who prepares his product for shipment in proper manner should not be compelled to pay the losses caused by the careless man. While it is possible that unprotected shipments will remain at the same rate, of double first class, the committee promised that they would make a distinction, and that when comb honey is packed in carriers with at least four inches of hay or straw in the bottom it will be given a lower rate. These carriers should be provided with handles so that they can be handled easily and a caution tag should be placed on top of the package. No single package should weigh to exceed 240 pounds. The reduced rate will go into effect when the next schedule is published which will probably be before Jan. 1.

Our readers who keep the files of their journals will do well to look up the June number and read again the article on "Getting Your Honey to Market." This matter of freight rates is a vital one, and unless the beekeepers pack their honey properly, freight rates will naturally rise to cover damages.

AMONG EASTERN BEEKEEPERS

The Second of a Series of Articles by the Editor on His Trip Through a Portion of the East

EARLY in the afternoon of Aug. 3, Mr. and Mrs. Latham and I, accompanied by a neighbor beekeeper, started for Storrs, in the Ford. We arrived a little late, for the meeting was open.

Storrs is the Agricultural College of Connecticut, the site of which was donated by the philanthropist whose name it bears. It is away from either railroad lines or cities and has to be self-sufficient. The students are boarded and housed on the grounds.

The active and courteous president of the Beekeepers' Association, Mr. D. D. Marsh, of West Hartford, had already informed me by letter that they expected me to be the guest of the institution. The convention lasted until noon of the following day. The secretary, Mr. L. Wayne Adams, is a young man with as much energy as their president. Half a dozen live subjects were discussed, foulbrood of course, wintering, marketing, requeening, etc. Here friend Latham made a statement which was a revelation to me. While showing at the meeting a large hive which he calls the "let-alone hive," he made the statement that the ordinary spacing of frames, in the brood-chamber, of 1⅜ inches from center to center is the "*greatest promoter of swarming.*" We have always succeeded better than the average in preventing swarming, and we have often given a number of reasons for our success. But here was one additional reason which we ought to have known and mentioned, for we use 1½-inch spacing in our brood-frames. We had never thought of the convenience and greater ease given to the bees by this additional ⅛-inch space between all the brood-combs.

If you go to the bees themselves, for information upon how far they wish to place their combs, you will have but little satisfaction. According to the best authorities, capped worker-brood needs but 34 millimeters, 1 11-32 inches, including the passage between the combs. But drone-brood requires 44 millimeters, or 1½ inches. If all combs could be kept exactly 1 11-32 inches from center to center, the bees could not rear both drone and worker brood; it would be necessary for them to leave the worker-comb empty, facing the drone-brood in order to have room for the sealing of this.

All beekeepers know how irregularly spaced the bees build their combs when left to their own devices. In some instances honeycombs are built two inches and more in thickness. So if we wish regularity, we must attend to the matter ourselves.

Regarding the usual spacing of frames, I will quote three authorities. Only one of them gives reasons for any particular spacing:

Quinby's "Mysteries of Beekeeping" says: "One and a half inches is the right distance for combs from center to center."

The "A B C of Bee Culture" says: "Some prefer 1½ inches, but the majority, supported by the best of reasons, prefer 1⅜ inches."

The Langstroth-Dadant "Hive and Honey Bee" says: "Greater spacing facilitates the taking out of the frames and aids in interchanging them. It gives more room between brood-combs for the bees to cluster in the winter."

And now here comes this statement of Allan Latham, which I consider of enough importance to write it again in capitals: "THE ONE AND THREE-EIGHTHS INCH SPACING OF COMBS FROM CENTER TO CENTER IS THE GREATEST PROMOTER OF SWARMING." This matter is worthy of consideration.

Another of friend Latham's ideas was brought out at the Storrs meeting. It is the use of lemonade as a cure for European foulbrood. The formula is 10 ounces of sugar, one lemon and half a pint of water for one colony. It appears that the difficulty lies in getting the bees to accept it. When honey is used in place of sugar, they take it more readily. It is not expensive. Try it yourself. Mr. Latham is a man of very forcible and convincing arguments.

DR. GATES DEMONSTRATING AT THE MEETING OF THE CONNECTICUT BEEKEEPERS' ASSOCIATION AT CONNECTICUT AGRICULTURAL COLLEGE AUG. 3, 1916—Photograph by J. H. Menter.

(LATER—Since the above was written, I have received a testimonial in favor of the lemonade plan. Mr. S. Powers, of Wading River, N. J., writes me that he has tried the lemonade cure, as well as a modification of it, consisting of one ounce of citric acid to a gallon of sweetened water, and that he cured eight cases in six days. He says both plans are good.)

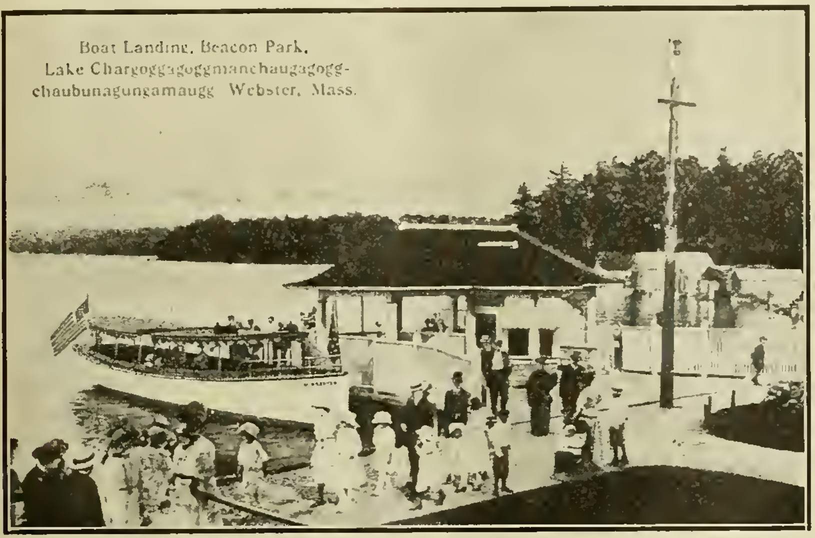
On wintering bees, a novel idea for me was given by President Marsh who uses a wire screen on a ½-inch frame over the combs, to give room for the bees to move from one comb to another. He places the absorbing cushions on top of this frame.

Dr. Burton N. Gates arrived at Storrs shortly after the opening of the first session. He was asked to give a demonstration in the apiary. A half-tone of this is shown here. The Storrs apiary, as will be seen, is on the edge of a piece of timber, in a very sheltered location.

At this meeting I met L. C. Root, whom I did not recognize at first, for he looked so much younger than the 75-year-old man whom I expected to find. But a successful operation, mentioned in February, page 47 of our Journal, has made a young man of him. He invited me to visit him and I later accepted.

Returning to the home of Allan Latham in the afternoon of the 4th, accompanied by Dr. Gates, I enjoyed again their hearty hospitality, and the following morning we started for the meeting at West Boylston., Mass., a distance of about 65 miles.

To a westerner, accustomed to the orientation of every house, every field, every road, almost without exception in line with the cardinal points of the compass, the New England way of making roads or building houses in the most convenient position, without regard to the exact location of the North star, has a quaint character and a pleasing appearance, reminding one of European landscapes. Probably our western method of setting everything by the square, on a round planet, is due to the immensity of our fields and the fondness of the plowman for straight furrows. The average western settler is very deeply vexed if his new house proves to have been built a half degree out of the line. Many a western farmer recognizes the dinner hour by the direction of his furrow. We cut a hill in two with a road when it would be much cheaper, easier and better for all if we made the road around it. In New England, the roads take the easiest way, in a pretty, rounding curve, whenever occasion demands. The dwellings follow the curve as a matter of course. And such roads!! No mud, no loose stones, no steep inclines. New England is an elysian field for the "autoist."


Boat Landing, Beacon Park,
Lake Chargoggagoggmanchaugagogg-
chaubunagungamaugg Webster, Mass.

THE BEAUTIFUL NEW ENGLAND LAKE WITH ITS UNPRONOUNCEABLE NAME

On the way, we passed a beautiful lake. (See cut.) Take a deep breath and pronounce slowly, one syllable at a time. If you can't succeed in spelling it out, go there and ask the natives. They have a charming way of reciting it, if you can stay long enough to hear it out. The Indians taught them how. The Indians are gone, but the echo of their voices remains on the beautiful lake. I am indebted for that picture to Mrs. Latham who was kind enough to forward it to me, with a charming little letter, after I had expressed the desire of securing it for publication.

At West Boylston, the meeting was held at the home of W. E. Parker, under the shade of fine trees, with a small apiary in the background. It was under the management of Messrs. J. S. Whittemore, of the Worcester County Association, and G. H. Cale and Benjamin P. Sands, of the Eastern Massachusetts Association. Hospitality was extended by the host in true New England beekeeper's fashion, to a crowd of about 100 practical beekeepers, among them Arthur C. Miller of smoke introduction fame, an original writer of wonderful ability and observing power. A number of the men present were old acquaintances by correspondence, persistent readers of the American Bee Journal, whom I had never met before. Did I name one of them, I should have to name them all.

A new and perfectly safe way of introducing queens was described by Mr. Crandall. He has a cage large enough to contain a frame of hatching brood. The bees are shaken off and the queen introduced in that cage with the comb which is placed in the center of the hive. In 24 hours or less the cage may be taken out. The queen begins to lay as soon as she finds suitable cells, and this insures her ready acceptance.

During a discussion of apiary grounds and removal of weeds, Mr. A. C. Miller suggested a sheet of "paroid roof paper" for ground covering under the bottom-board. A good grade of roof paper, like this, makes a cheap, firm and lasting stand, to keep the weeds down and the hive dry.

Here I met also a charming young lady who cannot be passed without a mention, Miss Josephine Morse, who gave a description of New England beekeepers' societies in our April number. Miss Morse was mentioned to me as having conducted a course of beekeeping during the past summer. I asked her for a synopsis of this for publication, and she sent me a very modest statement which the reader will find in the Woman's column.

In the evening of that day, I had to bid good bye, with regret, to the Lathams, who were going back home, while I continued my peregrinations with Dr. Gates, in his auto, a Franklin, a most excellent machine. But, laying aside all Ford jokes, the little Ford is ready for all emergencies, and at different times during the trip I rode in six different ones. We have four Fords in our family, and although it is true that the Ford will take you anywhere except in society, its society is good enough for me.

The evening of that day we spent at Worcester, with Mr. and Mrs. Gates, Sr. Mr. Gates is a retired lumber merchant. Meeting these two old persons gave me a clue to the excellence of their son. He is just as nice as he can be, but how can he help it? He has inherited it. And by the way, I call them old, but they are younger than myself; I take it back.

Point Pleasant, Lake Chargoggagoggmanchauggagogg-
chaubunagungamaugg, Webster, Mass.

ANOTHER VIEW OF THE MASSACHUSETTS LAKE

[To be continued.]

Economy of Heat in the Hive

BY H. SPUEHLER.

DR. PHILLIPS has acquired the great credit of having deeply studied the question of temperature in the cluster of bees in winter. He has elucidated by his researches a subject which is very interesting, but which had been insufficiently known until then, and we owe him thanks as well as to the Department of Agriculture, which has given him liberally the means of succeeding.

It must not be forgotten, however, that many European beekeepers have long ago sought to discover the temperature of the cluster and that they had fixed it at 97 to 98 degrees for the breeding center. Mr. Kramer, a well-known Swiss apiarist, was the first man, to my knowledge, who 25 years ago solved this question by the use of some 70 thermometers placed in the winter in different parts of the hives. His results agree in general with those of Dr. Phillips, but he became convinced that his conclusions could not be quite exact on account of the disturbance produced by inserting or removing the instruments, and for that reason he did not publish his investigations. But he solved another question, that concerning the relation between the entrance and the colony temperature, in winter. He selected 50 hives, half of which were allowed an opening of 200x15 millimeters (8x⅝ inches), and the other half 50x8 m.m. (2x5-16 inches). Each entrance was supplied with a thermometer and the temperature noted each day, morning and evening. The result was entirely in favor of the large opening. According to this experimenter the large opening produces the following advantages:

1. The unhealthy contaminated air from the breath of the bees is not retained.
2. The combs remain dry.
3. The bees are quieter.
4. The stores, whether sealed or unsealed, remain healthy.

In addition to this, the French savant, Gaston Bonnier, made experiments, to ascertain whether, to economize the heat of the colony, it was better to use a dummy-board or whether a dry comb would render the same service. He found no difference between the two. This should not astonish us, since the illustrious Tyndall has recognized that beeswax is the most impervious substance to radiating heat.

According to Dr. Phillips, the temperature of the brood-nest is between 95 and 97 degrees, but if there is no brood, it may go down to 57 degrees, providing the outside temperature does not go below that point. As soon as this happens the temperature of the cluster rises because the bees, inconvenienced by the cold, draw towards the center. The colder the weather becomes the more compact the group, and while the outer bees fill the space between the combs, the other bees occupy the inner empty cells. In this way the bees on the outer edges form a dense covering for the protection of the colony against the cold. The greater intensity of the cold causes a diminishing of the size of the cluster which gets nearer and nearer to a spherical shape, this shape giving the largest possible capacity in proportion to its surface, and for that reason allowing the least deperdition of heat.

The cluster, being changeable at will, can readily adjust itself to the exterior conditions. If the temperature lowers, the surface of the cluster and the loss of heat both decrease; at the same time the cluster is more dense and the inner heat thereby increases, since there is less occasion for the heat to escape. When the temperature again rises, the cluster expands, and the heat again escapes more readily, thus lowering the inner heat. The dense covering of live bees is less compact and the outer air pervades the cluster more readily. That is the explanation of Dr. Phillips' observation, "When the outside temperature begins to rise the cluster temperature drops slowly......only to be increased when the outside temperature again drops."

The following table indicates the enormous value which a condensed spherical cluster offers for the economy of heat in winter:

Combs		Surface in centimeters	Difference	Per cent
Reduc'n from	6 to 5	from 1465 to 1017	448	30.6
" "	5 to 4	" 1017 to 651	366	36.0
" "	6 to 4	" 1465 to 651	814	55.0

The cluster does not always form in exactly a spherical shape. Sometimes it is difficult for the bees to withdraw from one comb to another. The bees, however, withdraw from the outer combs, usually, early in the season, but assume the sphere shape only when the cold becomes intense.

The fact that the bees occupy not only the space between the combs, but the empty cells as well, and thus make the sphere as small as possible, indicates by what marvelously simple means Mother Nature provides the safety of the bees.

But why are the bees active within the cluster and thus increase the production of heat? Why are they less active when the temperature is high and more active when it is low? Are they informed of the need of activity to sustain their existence? I think not. The bees in the center of the cluster are warm and cannot realize the existing conditions of cold on the outer rim. But they *are in viciated air*, and the want of pure oxygen drives them to activity. They get rid of the foul air by action, night and day. It is the need of renewal of this air which compels them to act in more lively manner as the cold increases and the cluster becomes more compact and more impervious to an air current. *Air is needed and the entire cluster must be aerated.* In summer, air is needed to cool the inside of the hive and to help evaporate the honey. In winter a sufficient amount of air is needed to remove the breathed atmosphere and replace it with fresh oxygen. It is also necessary that the evaporating moisture be enabled to escape so as not to annoy the bees or disturb their comfort.

The necessity of a compact cluster has been fully recognized as guaranteeing the life of the bees against extreme cold. But the relation between the production of heat and the consumption of honey has not been touched. The general idea is that this consumption corresponds to the increase or decrease of cold, that it increases with a lower temperature and decreases with the higher degree. But this is not exact. The daily weighing of colonies does not prove it. Here is an example:

Both the German and Swiss Beekeepers' Associations practice these weighings daily in the summer and every ten days in the winter. One winter the November and December weighings showed the following comparative consumption and temperature:

Nov. consumption	Temperature	Dec. consumption	Temperature
140 grams	23.9	60 grams	18.9
70 "	21.2	60 "	21.1
310 "	24.8	110 "	15.8

November mean consumption, 173.3 grams; mean temperature, 23.3.

December mean consumption, 76.6 grams; mean temperature, 18.6.

The consumption therefore decreased while the temperature lowered.

It results from this that cold weather economizes the stores and becomes the ally of the beekeeper. How can we explain this? We have shown that during extreme cold weather in the outer shell bees move but little, and this inactivity reduces the need of food consumption. They economize on their food because of the economy of their physical strength. In a mild winter it is the reverse. The flights are numerous and the stores disappear and diminish the hopes of the apiarist for the following harvest. The deduction we draw from this is that the beekeeper must see to it that his bees be disturbed as little as possible during the winter, for their benefit and his own.

Zurich, Switzerland.

[Our readers will remember our correspondent as the translator of Bertrand's "Conduite du Rucher" from French into German. Mr. Spuehler is not only a good beekeeper and a student, he is also a polyglot, since he reads and writes three or four languages. We mentioned our visit with him at Zurich, in our "Notes from Abroad" in September, 1914. He has contributed to our Journal several times, since.

The principal question upon which Mr. Spuehler insists is the increase of heat of the cluster caused by its greater or less compactness. A similar statement will be found in an article by Mr. J. E. Hand, a practical beekeeper who is well known to our readers, on page 305 of the September number.

Although Dr. Phillips, in the wonderful report made by him in Bulletin No. 93, shows that the cluster becomes more compact, with the decrease of temperature, he gives us to understand that the "source of the heat of the cluster must, of course, be the oxidation of the food consumed by the bees" (page 15). That this heat is better kept by the compactness of the cluster is evident. Phillips also says: "That higher temperatures may be produced, greatly increased muscular activity is required......bees fan to heat the cluster in winter as well as to cool the hive in summer."

But the explanation given in the above article, by Spuehler, that the bees fan within the cluster to secure pure oxygen "because the air is needed" within this compact cluster, must be correct.

A question which Mr. Spuehler raises is that of the connection between consumption and temperature. He indicates that the low temperatures require less consumption. We acknowledge that we have been and are still of a totally different opinion. Although Bulletin No. 96, on "The Temperature of the Colony," by our friend Prof. Burton N. Gates, of Massachusetts, shows that "the rate of consumption of stores exhibits relatively constant decrease from month to month," Gates gives reasons for this which may have also been the reasons for this decrease mentioned by Spuehler. There is a notable lessening of the number of bees, and therefore of expenditure in stores not dependent upon the weather. Gates says that "when bees were more active and before settled winter weather, food consumption was greater than in midwinter." There is also as he reports a condensation of moisture increasing the weight of the hive while the stores decrease.

We are still of the opinion that, in winter, very low temperatures cause a great increase of consumption, over that of ordinary winter weather, because of the greater activity within the cluster. Although colonies are often "as quiet as death" during cold weather, when well protected, a loud humming is heard at times, from the outside.

On all these matters, it is well to say, as does Dr. Phillips, that "too hasty conclusions must not be drawn from the facts presented." More light is needed.

But on two things we are all agreed: The colonies must be kept as quiet as possible, especially in the coldest weather, and a sufficient amount of ventilation supplied. On this latter point we call the attention of the reader to the article by our able Italian correspondent, Mr. D. Barone, in the present number.

All the statements of these writers confirm the advice given by Mr. Langstroth years ago on wintering bees.—EDITOR.]

Influence of the National Beekeepers' Association

BY PROF. FRANCIS JAGER, PRES.

THE most pleasant feature of the annual gathering of the National Beekeepers' Association is the inspiration which one gathers from contact with the master minds of beedom. Were it not for these gatherings of the National there would be no chance whatever for the beekeepers of America to have the pleasure of seeing and hearing the leaders in our profession. We would know them only from their books and articles and hearsay. Still more unfortunate would be the fact that these prominent men would have no occasion to meet each other.

This personal contact with beemen we know so well is an everlasting source of inspiration, forcing one into thinking, planning, correcting, improving, and by making him realize his own weakness and ignorance stimulate him to better and more perfect things. The fact that beekeepers, like "birds of the same feather," flock together, would justify the conclusion that this experience is not an isolated, psychological phenomenon, or, in plain English, that beekeepers, just like the bees they keep, swarm once in a while and cluster in a bunch in a riot of mental pleasure and joy.

They tell a story about Tennyson and Carlyle. They used to visit each other to gather from each other's company new thoughts and inspirations for their literary work. Carlyle would call on Tennyson to spend the evening. They would move their chairs to the fire place, light their pipes and solemnly stare into the crackling logs, the dancing flames and curling smoke. Never a word was spoken for two or three hours. About half past ten Carlyle would rise to go, and shaking his friend's hand would say: "So 'long, Tenny, we have had a most delightful evening together."

And so they did. They were both better men for having had the visit. And if no word was spoken, who could describe the wealth of thoughts that passed through these men's minds during those three hours. Indeed, speech would have been an interruption, a profanation of the great work they were then doing.

Let us meet once a year in some part of the United States under the name of the National Beekeepers' Association in a circle of friends. It is true, we cannot keep silent for three hours at a time, but the influence is there just the same, and we return home better beekeepers and better men.

The National will meet next February at Madison, Wis., with Mr. N. E. France as host. For membership and information write to Eric Millen, East Lansing, Mich., secretary, and help to preserve the best we have.

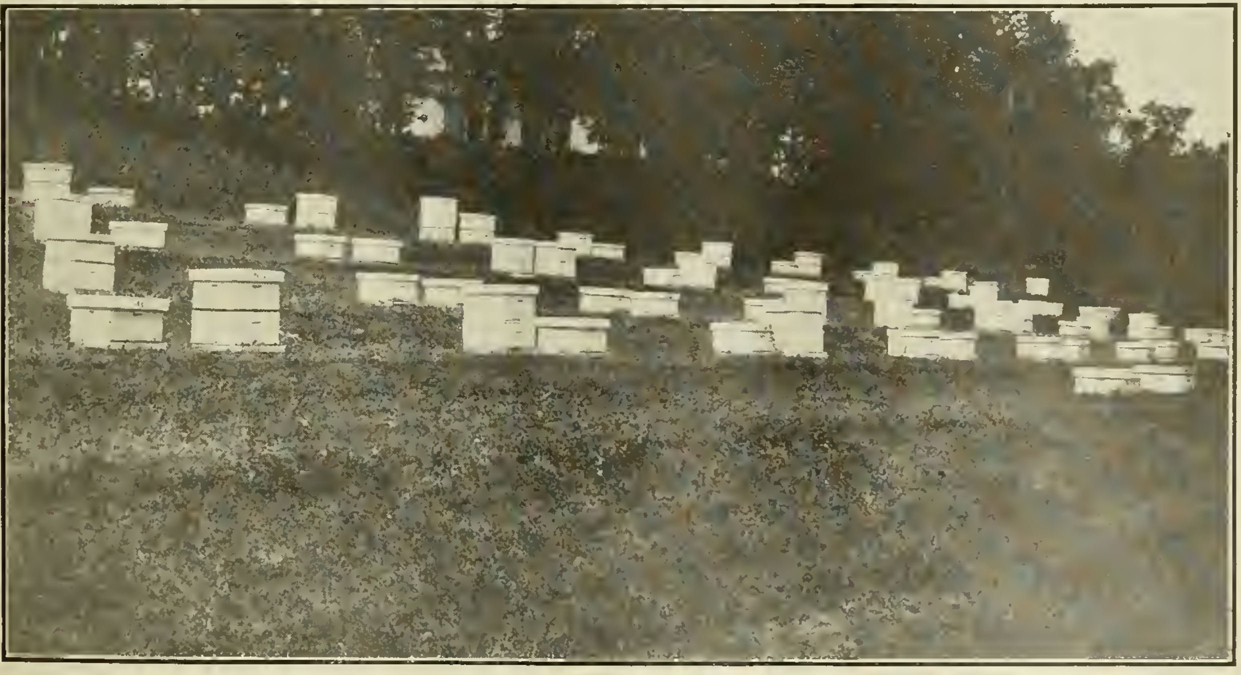
St. Paul, Minn.

Wintering in Single-Walled Hives

BY D. BARONE.

IS it possible to winter bees successfully in single-walled hives? I say yes, and the problem is not so hard to solve as it might look like at the first glance. I foresee many a reader giving a reception of skepticism, and perhaps of good humor, to this assertion, since they have been so (badly?) influenced that in their opinion the ideas of good wintering and quadruple cases and double-walled hives and so on, can by no means be disjointed.

Yet, notwithstanding the ready opposition, plucking up my courage, I am going, in support of my thesis, to quote facts because I think facts always more convincing than the most elaborate reasonings, and because not being a



APIARY AT THE UNIVERSITY FARM, ST. PAUL, MINN., IN CHARGE OF PROF. FRANCIS JAGER scientist, I am not in a position to develop it with the assistance of scientific arguments.

During April, 1915, Mr. F. W. Pease, one of the most intelligent and extensive Iowa beekeepers, and myself went through his yards, the first visit in the opening of the then well promising season. In spite of the darkest predictions we found things going better than we expected. A number of strong colonies, the brood proportionate to that number, the queens fairly busy, and the honey, lastly, sufficient to sustain them; until a fresh harvest. Mr. Pease told me that he never had bees in better condition in springtime. How did he manage to get such good results?

In July preceeding the extraction, we saved three full sealed combs of the best clover honey per colony (and this practice was a very opportune one, since the fall crop, unusually, was a failure). In fall we traded these combs with empty ones taken from the brood-chamber, united the weak colonies, put on queen-excluders, shallow supers full of dry leaves, and lastly wrapped the hives two by two with black tarred paper. That is all. Each colony was generously granted not less than 30 pounds of stores with the entrance ⅜ of an inch deep for the whole width of the hives.

The disposition of the combs in the hives plays a very important role for successful wintering. Suppose we intend to wrap the colonies in pairs, as in this case. We cannot put in combs with honey scattered here and there. The clusters move towards the warmer part of the hive, and, of course, on that side which is in touch with the next hive, we must set the full combs, leaving the lighter ones to fill the other end.

The advantages are obvious. Let us keep track of the slow march; in the middle of the winter the two clusters will be changed into a big one, divided only by the walls of the hives. The combs which the cluster does not cover serve as splendid insulators, as the exhaustive experiments of G Bonnier assure us, so that under such an arrangement as we can readily understand, the production of heat will scarcely require half of the energies of the bees and no danger of starvation will be feared.

In April of this year, too, Mr. Pease assured me that the bees were getting along well. Hence, after such reliable and steady results we are led to freely recognize the requirements standing on steady and positive foundations, the rigid rules of hygiene graciously coupled with a fair economy. If such a management proved a positive success in Allamakee county, in the northeast corner of Iowa, why can it not prove equally successful all over the country? I feel unable to give the question a congruous answer. I do not wish, however, to be misunderstood. I am not trying to demonstrate that the double-walled hives, the quadruple cases, the tenement hives, the cellars, etc., cannot be a success for wintering. The more the better. But are they really and strictly necessary?

No one will find unworthy of praise, deep admiration and strong encouragement the accurate studies, the subtile and patient search, the diligent experiments on that matter. Both science and practical culture certainly make valuable gain by them. However, I feel justified with the comfort of positive facts and stringent logic, in saying that it is practically realizable to winter bees even without those expensive implements.

In reading through the interesting beekeeping literature, there arises in my mind the belief, possibly wrong, that too much is said about winter protection and too little, indeed, about adequate ventilation as condition *sine qua non*. Inadequate ventilation is a double threat to the health and welfare of the bees, and the stronger the colony the greater the danger. The slow and continuous reabsorption of the carbonic acid may cause even the death of the colony, besides inevitably bringing it to a pitiful condition.

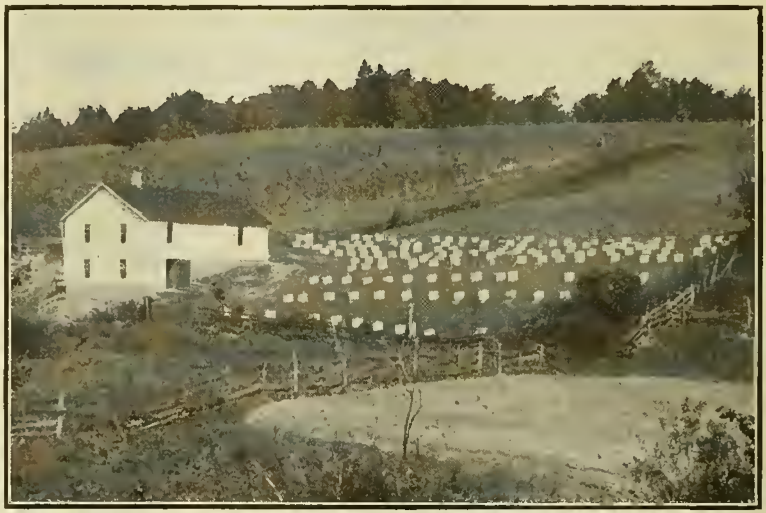
Given the very hygroscopic nature of the honey, the best stores, when no escape is left to the watery vapor, are liable to become the poorest, hence dysentery and dwindling. Therefore, I suggest that a good share of the heavy losses should be charged rather to either or both of these causes than to severe temperatures. Some disappointed beekeeper says within himself: "Perhaps I left the entrances too large and the bees froze in spite of the four inches of packing. Next fall I will be more careful."

The next fall, taught by the past experience, he still reduces the entrances so that, in his opinion, the wind and the snow cannot endanger the bees, and provides perhaps a supplementary packing; instead of four inches making it ten inches. In the following spring, with the support of honest conscience, he pays the first visit to his bees. Alas! what a sad surprise. The bees are in worse condition than ever. But what looks stranger to him is the apparently inexplicable fact that the weaker colonies last fall are those which have managed themselves better through the winter, while the stronger ones manifestly show signs of the most discouraging depletion.

The short entrance clogged with dead bees should speak to his intelligence clearing up the embarrassing puzzle. We should find the root of the trouble in the failure on his part to make easy the removal of the vicious air within the brood-chamber.

Apropos, this argument recalls to my mind the conflicting reports as to whether the aster honey was good for wintering. Now it seems a settled question that such honey is fortunately no longer considered dangerous. Why were those reports conflicting? Did the soil influence, according to the different localities, that kind of honey? Maybe and maybe not, but I am rather inclined to believe that the bees of the reporters were under unlike conditions in respect to the enunciated sound principles of hygiene.

Finally, with a sense of confidence we can axiomatically state that abundant good stores, strong number of bees, and young bees especially, pure and dry ambient, soundly linked together, are the essentials for winter protection. New York City.



HONEY HOUSE OF M. C. SILSBEE AT HARKINVILLE, N. Y.
Notice winter bee-cellar under the house, and convenient proximity of apiary to minimize moving costs in cellaring.

A Handy Bee House

BY M. C. SILSBEE.

My bee-house is 24 feet by 40 feet north and south, the cellar being of the same dimensions. I have a partition through the cellar which shuts off the wintering cellar from the tank room; the wintering room is 24x30 feet, and the tank room 24x10. The outside door of the cellar is 4 feet wide, making a roomy entrance.

Above, my extracting room, is 24x30 feet with a 3½ foot door in the end of the building. The balance of the ground floor is made into a storage room. It is here also that I crate and clean such comb honey as I produce.

The floor is a double one of hard pine with building paper between with four trap doors 14x20 inches to aid in winter ventilation of the bees.

The cellar has a cement floor, and the walls are laid in cement and stone

They are 3 feet thick at the bottom and 18 inches at the top.

In cellaring, 2 or 3 inches of planer shavings are scattered on the floor, then 6-inch timbers, on which the colonies are placed, with bottom-boards removed, which allow all dead bees to drop to the floor.

Cohocton, N. Y.

Some Prominent Ontario Beekeepers

BY MORLEY PETTIT, PROVINCIAL APIARIST.

MR. R. H. SMITH, of St. Thomas, was president in 1907. At that time Mr. Smith conducted an extensive bee business, exhibited annually at Toronto fair, and also made and sold beekeepers' supplies. Failing health, however, induced him to go to western Canada where he was still living at last reports.

The president in 1908, was F. I. Miller, of London. Mr. Miller is one of a number of successful users of Heddon hives in that district. He has worked out the principles advanced by the late Mr. Heddon, to their scientific conclusion, and has developed a system of apiary management by which he looks after several hundred colonies of bees with very little assistance outside of himself. His honey is all bottled and sold in high-class grocery stores throughout the southern part of the province. Mr. Miller does practically all of the bottling himself, acts as his own salesman, and so keeps himself busily engaged throughout the year, as well as keeping down running expenses.

During 1909 and 1910, Wm. Couse, of Streetsville, occupied the chair. Mr. Couse had become secretary in 1886, but because of more pressing duties in his business, he gave up the books in 1908, becoming president for the two following years. He is a successful coal, wood and feed merchant, keeping about 100 colonies on the side. His interest in bees is always keen, and every convention and official meeting of any kind finds him in attendance and ready with the advice which his years of experience enables him to give so well.

The president, in 1911, was W. J. Craig, manager of the bee-supply department of the Ham & Nott Co., of Brantford. Mr. Craig received his early training in this line of work while employed by the Goold Shapley & Muir Co., and was for a number of years editor of the Canadian Bee Journal.

During 1912 and 1913, the president of the association was Mr. Denis Nolan of Newton Robinson. Mr. Nolan comes from a family of beekeepers situated not very far from the old home of Mr. D. A. Jones. He was one of the first in Ontario to use a gasoline engine for running the extractor. A little later he purchased a Ford car for his apiary work, and was soon drawn into the Ford organization, becoming salesman for his district. While Mr. Nolan is still secretary of the Simcoe County Beekeepers' Association, his interest in bees is not so strong as it was, because so much of his time is taken up with the automobile work.

During 1914 and 1915, the chair was occupied by Mr. J. L. Byer, of Markham. Mr. Byer also comes from a beekeeping family, as his father and grandfather were beekeepers in Markham before him. He is now one of the most extensive beekeepers in the province, and with the assistance of his father and son, and other members of his growing family, he has upwards of 1000 colonies in different parts of the province. However, Mr. Byer needs no introduction to the readers of the American Bee Journal, having until recently conducted a department in its pages.

ONTARIO AGRICULTURAL COLLEGE APIARY
The hives are set in double rows with room to set quadruple winter case in flat between

The present occupant of the presidential chair is Mr. F. W. Krouse, of Guelph. A few years ago Mr. Krouse gave up a job as day laborer at the Ontario Agricultural College to start market gardening, poultry raising and beekeeping. He has been successful in all three of these, but is gradually reducing his interests in the former two, so as to be able to devote his whole attention to the production and sale of honey.

Now of these men who have successively occupied the chair of the organization which has done so much for beekeeping in Ontario, all, previous to 1900, have joined the great majority except R. McKnight, of Owen Sound, who was one of the founders of the association; R. F. Holtermann, who was one of the earliest secretaries; Martin Emigh, A. Pickett, and M. B. Holmes.

Starting in 1880, the Ontario Beekeepers' Association has made a steady development up to the present. It would be impossible to enumerate all the benefits which Ontario beekeepers have derived from this organization. All legislation which we enjoy has been granted at its request. Under legislation we might mention the Foulbrood Act, which at present provides a substantial annual grant for apiary inspection and gives the inspectors complete power to find and control disease. The adulteration of honey is well looked after under the Pure Food Act of the Dominion, and bees are protected from poison by the improper spraying of fruit trees by an Act, which makes it illegal to spray fruit trees with any poisonous spray while they are in full bloom.

MORLEY PETTIT

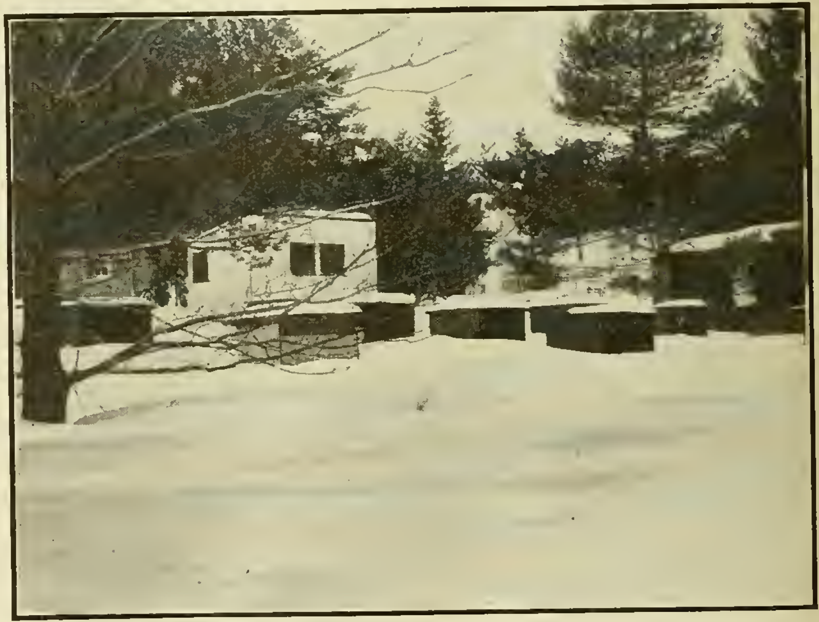
Beekeeping is taught at the Ontario Agricultural College. An experimental apiary is conducted there, and demonstrations are held throughout the province; all being under the supervision of the present writer who is employed by the government to give his attention to the interests of beekeepers. The association receives the benefit of his services as secretary, besides getting an annual grant of money from the government to assist in carrying on its business. Having office facilities and time to devote to the interests of the association, he was able to interest beekeepers who had not previously been reached and thereby more than double the membership in one year. There are now between 1100 and 1200 paid up members.

Perhaps the most valuable service rendered to members has been the annual crop report and price recommendation, which has been given each year for the last 13 years. This has done much towards stabilizing the honey market. In conjunction with this, the secretary is often able to bring buyer and seller together, and in 1913 when the crop was unusually large sold about 75,000 pounds of honey for members of the association.

Another service provided by the secretary, which is used freely by members is the purchase of queens for improvement of stock. By this the small order receives as prompt attention as the large and at the same price. Orders which might otherwise be sent to a breeder who was behind with shipments are diverted to men who have equally good stock and are known to be filling orders promptly. Thus the secretary's office becomes a clearing house for queen orders and the member not only gets prompt delivery, but good stock as the breeder knows that he is not selling to an unknown individual but to the Ontario Beekeepers' Association. The breeders on the list are carefully selected, any not giving satisfaction one year being eliminated the next.

To continue the account of Ontario beekeepers it might be in order to speak of the number of women who are taking up beekeeping as a means of pin money, if not of making a livelihood. Amongst these might be mentioned farmers' daughters, nurses, school teachers, to say nothing of the numerous wives of farmers and of beekeepers who take an active interest in this work. It is not uncommon to find a woman who finds the apiary work more congenial and profitable than some of the indoor occupations which women are expected to follow. There are at present over 80 women members of the Ontario Beekeepers' Association, and of these I might mention a few typical cases. The Scott sisters of Myersburg, Northumberland County, when European foulbrood attacked the apiary and the father decided to give up, took charge of the bees and cured them. The two girls not only cured the disease, but developed an apiary of about 40 colonies, which was very profitable. This was four or five years ago. The older one has since married and left home; and the younger, Miss Nellie Scott, continues the apiary work with her young brother. Miss Ethel Robson, of Ilderton, took up beekeeping to pay her way through college. Being successful and a good speaker she was made a director and a vice-president of the Provincial Association. She also acted as secretary of the Middlesex Beekeepers' Association. Miss R. B. Pettit, a sister of the present writer, undertook the management of a good-sized apiary without previous experience. By careful application and study, and through many mistakes and some losses, she has reached a point in a few years where she is quite capable, by employing labor, of managing several hundred colonies with profit.

Another type is the English woman, who comes out to make her living. She brings with her the Englishman's persistency, which is more than half the battle. Take the case of Miss L. Livesay, now of Rt. 2, Cainsville, who has had some experience under Isaac Hopkins, at the Government Experiment Station in New Zealand. She wrote from England, asking what the opportunities were for a woman getting employment in a Canadian apiary. The reply sent was intended to be discouraging to any one without capital to invest. She came on the next boat. Fortunately, she was found employment in an apiary, where she worked the next two seasons and then purchased one of her own. The second season she was joined by Miss M. L. Newland, another Englishwoman, and both of them worked for the same beekeeper. When they started on their own account, they purchased apiaries and located them not far apart and are now making a comfortable living from bees. They are now helping other English girls to get experience and a start in the business.



PACKED IN QUADRUPLE CASES AT THE ONTARIO EXPERIMENT APIARY

These and other beginners who have started in the right way and have persevered, have discredited, beyond the peradventure of a doubt, the old advice so commonly given to beginners to start with one or two hives and go slow. I well remember the late E. W. Alexander's assertion that "go slow" would kill any young man. It is only the question of getting a right start by working for an extensive beekeeper, or taking a course at an apicultural school, and then securing enough bees to occupy one's time. There will, of course, be mistakes and losses on a larger scale than would be experienced with two or three hives, but with attention to the instruction which is so freely given at conventions and in reports and bulletins, there is no occasion for a disaster, such as a heavy winter loss. Such disasters only come as a result of going contrary to the well-known principles of successful management. The one who starts with a good-sized apiary may have the misfortune to meet one or two crop failures, which will be a heavy tax on financial resources, but when success finally crowns persevering efforts, the profit is so much greater than it would be with two or three hives that it is well worth the venture.

Guelph, Ont.

[To be continued.]

Marketing Honey

BY C. P. DADANT.

(Read at the Wisconsin Convention in 1915)

MR. FRANK C. PELLETT, the Iowa State Inspector, has recently brought to me the suggestion that the neglect of honey as an article of food is due to the lack of official support to our industry. He says that honey is, towards glucose and all corn syrups, in the same relative position as butter is placed towards margarine. Yet butter is not neglected for margarine, as honey is neglected for glucose. In fact, no one who can at all afford it will eat margarine in place of butter. Yet margarine is so much like butter that deception is very easily practiced. I myself remember eating breakfast, side by side with a drummer of margarine, at a small country hotel, and hearing my companion exclaim: "I thought they could afford butter in country towns!" He had recognized the taste of his own product. But even after I was told of it, I could not distinguish it from common butter. With honey, it seems to me, the case is different. Any one, after tasting corn syrup and honey, ought to be able to recognize the difference in sweetness, the former containing less than 30 percent of saccharine matter, while the other has about 80 percent. As far as the contents in sugar are concerned, the poorest honey is worth about three times as much as corn syrup; and when we think of the substances used to transform starch into sugar in manufacturing commercial glucose, we certainly should figure honey at four or five times the value of corn syrup.

But it is as Mr. Pellett says, there has been no active official support of honey against glucose. In the butter industry there is an army of officials representing the diverse interests of the dairymen, in the State agricultural associations, in the colleges, even in the State governments and the United States Department of Agriculture. The farming interests are carefully fostered, but the beekeepers have thus far received scant recognition and their rights have been left in their hands. We all know how little efficiency there has been as yet in our associations, whether State or National.

Yet, I believe every person who is at all acquainted with the subject will agree with me that the unhealthfulness of glucose as compared to honey is greater than that of margarine as compared to butter. The fight, if it is made for honey, ought to bring an easy victory. In this case, what we need is to have in our colleges, our boards of agriculture and in all official places where the dairy interests are cared for, men as active and efficient as those who represent the farmers' main products.

But is this all and will that be sufficient to secure an increased recognition of honey on the consumer's table? It certainly ought to help.

A very good argument concerning the food value of honey may be produced, while the same argument does not exist in comparing butter and margarine. Those two substances have a very similar food value. The food value of honey has been shown by an entirely disinterested authority, W. B. Barney, State Dairy Commissioner of Iowa, and those of your members who have read the American Bee Journal for December, 1915, have found out that, at present prices, honey is one of thecheapest articles of human food.

However, with all these convincing arguments, we will probably be still confronted, for years to come, with the problem of creating an increased demand for honey. We must then consider the principal requirements.

Marketing honey can properly be divided under two separate heads, entirely different. The first is packing and preparing the product. The second is seeking customers.

Many beekeepers who are unfit for drumming their honey market, or at least consider themselves unfit, are quite expert in putting it up for sale in neat form. It takes cleanliness and judgment. Comb honey cannot bring the value it deserves unless it has been properly stored by the bees in neat sections and is afterwards put up in attractive cases. It must also be offered in regular grades. The law which compels us to sort out the sections of different weights so the retailer will not run the risk of offering a 10-ounce section at the same price as a 14 ounce, is really a benefit to us, though we did not realize it at first. All that is needed, to make sure of it, is to start out among the retailers. We make them secure against the most common complaint of the consumer, short weight, when we offer them a package in which each section has its minimum weight marked upon it.

The careful beekeeper, who has supplied his bees with up-to-date supers and good foundation guides, is usually the one who also most carefully grades it. He is likely to put up his extracted honey, without a mote or a blemish, in neat tins or glasses. He crates everything so that it may travel safely without leaking. But he usually is the man who does not like to go from grocer to grocer, or from neighbor to neighbor, begging for them to try his product. However, I believe that, as a rule, he may be easily persuaded to advertise. This, of course, if rightly conducted, will make matters much easier for the drummer.

A very good advertisement, suggested by our old friend, the erewhile cow-boy, Dr. Bonney, is the little red slip "EAT HONEY" to be pasted upon everything, everywhere, as "SOZODONT" used to be. It has been tried. The American Bee Journal household alone have supplied over a million of these, not only here, but in foreign countries as well. But that is not enough. Let me ask the question whether any of you have seen these slips in public places, except where you have yourselves pasted them? "SOZODONT" was painted on the walls of buildings, on fences, on sidewalks, and I have even seen it written in almost inaccessible places, on rocky bluffs, along the Mississippi river, in letters 10 feet high. Our beekeepers cannot do that with "EAT HONEY" stickers, but they can each spend a few dimes to call the people's attention to a long forgotten sweet, of which the most respected authorities say: "Eat honey, my son, for it is good."

I will never forget the reply I received once from a good friend of mine, now deceased, who used to sell thousands of pounds of my honey, although he was neither a grocer nor a drummer. He was just an office man, busy at his desk almost from morning until night. How do you succeed, I asked him, in selling so much of my honey, apparently without any effort? His reply was:

"My boy, there is no difficulty in selling honey. If I had to handle tobacco, or whisky, among my friends, although many more people use those articles than honey, yet I would daily meet people who would say to me: Aren't you ashamed of offering such stuff for sale? But honey? Why, no one objects to honey. Everybody knows that it is good, sweet, healthy. Only once in a great while do I meet some one who says honey has made him sick, and I answer that he or she probably ate too much of it. The funny thing is that it is almost always true. The only question people ask is whether it is real honey, pure honey. And when I say that the producer of this honey lives in the country and is a friend of mine and that I can guarantee his goods pure, I make a sale, especially if I can give them a sample to taste."

That is all the secret of marketing honey. Make the people think about honey for a minute. Then let them know you have it and let them be convinced, in an *undoubted* way, that it is really honey from the bees and your sales are assured.

I said that honey marketing could be separated under two heads, packing and drumming, but I have now mixed them up. I have tried to convince the careful producer and packer of honey that he can also be a good drummer. But it is out of the question to get some of our best beekeepers started in peddling honey. One of our best producers said to me:

"I can raise honey as well as any one and I can put it up in fine shape, but I am no good at offering it for sale. If I make a trial at it and go into a grocery, if they say no, I walk right out without trying to argue the point and I am ashamed to try the next. When it comes to going to private houses, it is still worse. I always feel as if they considered me as a book agent or a beggar. If I happen to have enquiries, it gives me a little courage, but just as soon as I meet a refusal or a doubt of the quality or purity of my product, I want to be a hundred miles away, as soon as possible."

There is too much truth in that statement for the good of honey marketing. The only remedy for that bashfulness is the securing of a good talker, or thorough advertising. However, with a little self-reliance, a man can get a start and if he succeeds, he becomes encouraged.

I cannot too much urge the selling of our crop or as much of it as possible, even in our own vicinity. Personally, we have sold our own crops usually without difficulty, and we now sell three or four times as much as we produce. But even with all the advertising that we do, every now and then we find that other honey has been supplied where we could have furnished it, had we more thoroughly covered the ground.

Cheap sweets, which can in no way be true substitutes for honey, are the greatest hinderances to its sale, since they apparently fill the demand, through the positive ignorance of the masses concerning the difference in food value and healthfulness.

So we must openly and unrelentingly fight the cheap sweets. We should *demand* the help of our agricultural officials and colleges in this fight.

Thoughts When Reading the Leading Article in the June Number

BY F. GREINER.

HONEY, it is true, could be on the market every day in the year, because it is not as perishable as many fruits, grapes, berries, etc., and still, like them, has its season. People have accustomed themselves to demand honey in the fall and early winter; there seems to be but little call at any other season. On the other hand, a continuous demand might be created by continuous advertising. The question then arises: Who is going to pay for this advertising? Large corporations who monopolize certain branches of industry can easily carry on such work. They can establish their price for the commodity they produce, but can we beekeepers do this? It would mean concert action of the beekeeping fraternity; it would mean the putting of our money into the advertising business. I wish that we honey producers might learn from such concerns as produce cornflake, wheatflake, shredded wheat biscuits, etc., but it seems we are not willing to put our money into it. Extensive advertising would cost us many thousands of dollars as it does other concerns, but it would be effective.

The honey producers are situated exactly as the other agricultural producers, the farmers generally are. They produce the goods, but they fail to pool their interests so as to be able to control the market. On the other hand, there are many good points made in the leading article of the June number, and the article will bear reading and re-reading.

However, the illustration of the carrier is misleading. That style of carrier was all right before the present ruling of the railroad companies went into effect, but will not do at all now. A friend of mine had several tons of comb honey put up in such carriers last fall, and when he took it to the station for shipment the railroad company refused to accept it. He was at the trouble of remodeling the carriers by using more lumber and making perfectly tight boxes of them. If the honey producers understand this fact that all honey must be enclosed in tight boxes, they will save themselves much trouble.

Naples, N. Y.

[Mr. Greiner is right concerning the agricultural producers, beekeepers or farmers. "They produce the goods but fail to pool their interests so as to control the markets." A popular magazine writer said lately: "The farmer produces his crop by the most modern methods, but he disposes of them by the same methods as did the farmers of the Middle Ages."—Editor.]

Minnesota Notes

BY EDW. WILLBRIGHT.

I BOUGHT an automobile last fall and worked out a scheme for using the machine for power to run a circular saw. I made a frame wide enough for both hind wheels, and by means of four pulleys covered with rubber, hooked up to a circular saw. This outfit answers all my needs in the saw line. For shafts I used one-inch gas pipe.

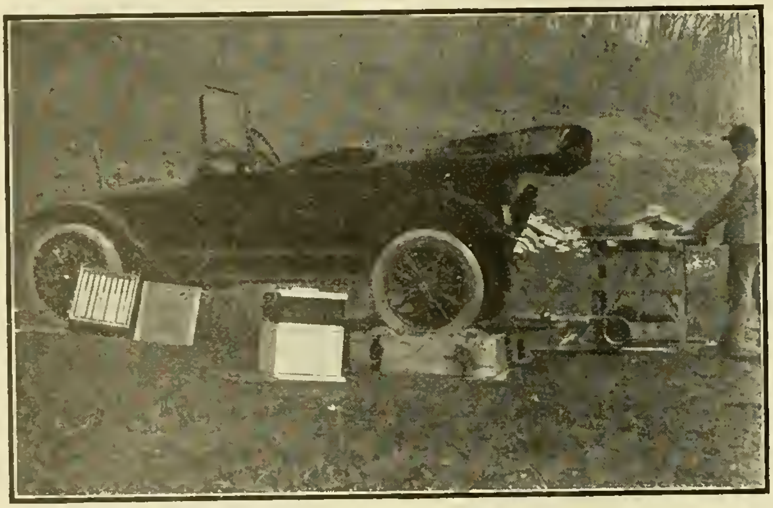


FIG. 1.—EDWARD WILLBRIGHT USES HIS TOURING CAR TO RUN A SMALL CIRCULAR SAW

Figure 2 shows a design in honey that took first prize at the State Fair, and also at the county and local fairs. Figure 3 gives designs in beeswax. The extractor has comb pockets and will run, but is not reversible.

Unfortunately my bees are some 20 rods from my cellar, necessitating a long haul. Again, Fig. 4, I had to call my car into use to get the colonies moved. It accommodated eleven at a trip and insured easy riding and few jolts for the lot.

Preston, Minn.

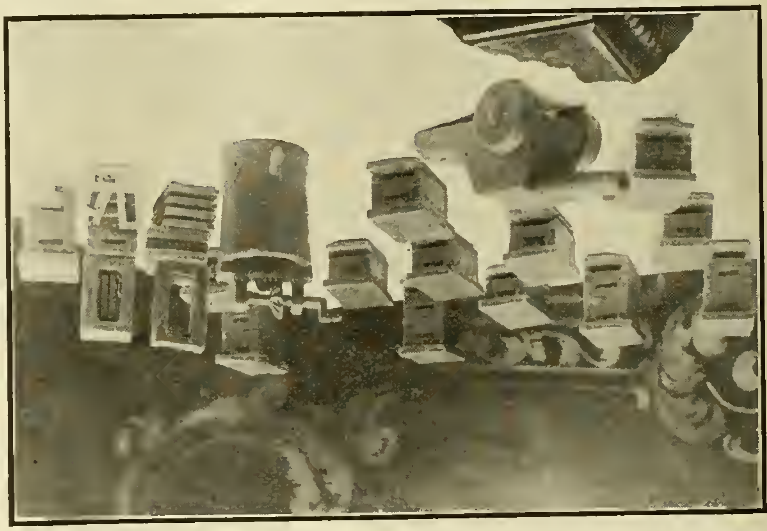


FIG. 2.—WAX MINIATURE HIVES, A WAX CANNON, AND A HONEY EXTRACTOR MADE OF BEESWAX

The extractor works, too, but could not be made reversible.—Edw. Willbright

Various Thoughts from the Bee-Yard

BY G. C. GREINER.

WITH the usual routine of fall work in the bee-yard, of which placing our bees in their winter quarters forms the last part, the season is ended. If feeding, where necessary, has been properly done, we may rest easy and trust providence for the future welfare of our bees.

When examining my bees for winter stores about the middle of October, 1915, I found eight or ten colonies run for extracted honey not as heavy as I would have them for best results in wintering and springing. It is always this class, if any, that is deficient in stores. They keep storing in their supers and neglect to stock up their brood-chamber with sufficient winter stores. This is probably one reason why bees produce more extracted than comb honey. All my comb-honey-producing colonies were up to standard weight, and those used for finishing sections by feeding were even heavier than necessary. They probably had some honey to spare to help out needy ones in the spring.

After many years of experience trying different feeding methods, I am satisfied that heavy combs of capped honey are the most desirable for this purpose. I secure them by sorting out the right kind of combs when doing my last extracting. If any colonies are found insufficiently supplied, which I easily ascertain by lifting, I exchange one or two light side combs for some of those reserved combs of honey. This is a simple operation, quickly done and no smoke needed. Some cool morning when bees are well clustered, the cover can be slipped an inch or two to one side and the exchange made in less time than it takes to tell it. This, by the way, tallies one for loose-hanging frames. With the Hoffman or any self-spacing frame it would not work so well, but it could be done.

While the subject of exchanging combs is under discussion, I wish to give my younger beekeeping brothers, who have not yet stocked up with bee-supplies to any great extent, a few hints from long years of experience. When an apiary is once started, when we are once stocked up with an outfit running into the hundreds of hives and appliances, it is an expensive and troublesome affair to make a change in one form or another. In planning our future work our main object should be to adopt ways and means which are likely to give permanent satisfaction according to our best judgment, taking all points into consideration.

A short time ago a young beekeeper, or, if I am justified by the run of his conversation to consider him a "contemplating" beekeeper, called on me for a few pointers on various subjects. He intends to compromise between the low 5-inch and the full sized 9 or 10 inch extracting super by constructing one about 7½ inches deep, because he considers the former too low and the latter too deep. This is very well in some respects; he may gain some anticipated advantages by doing so. But after long years of experience I would under no consideration deviate from my fixed rule of uniformity, both in frames and outsides. The advantages gained by varying in form or size would in no way compensate for those lost by irregular construction. The above described easy manner of feeding for winter stores would not be possible without this uniformity. Then, again, it is many times desirable to move, for certain purposes, combs of brood from the brood-chamber to the super above the excluder, which is frequently done to cure slight attacks of foulbrood. Another advantage in uniformity of outsides is the case of changing from one to the other. It sometimes happens that we have more of one kind than we have of the other. By simply detaching the bottom-board from the hive we have a super and *vice versa*, the same bottom hooked to the super completes the hive. These changes may not be every day occurrences, but they are a great convenience when we do have occasion for their application.

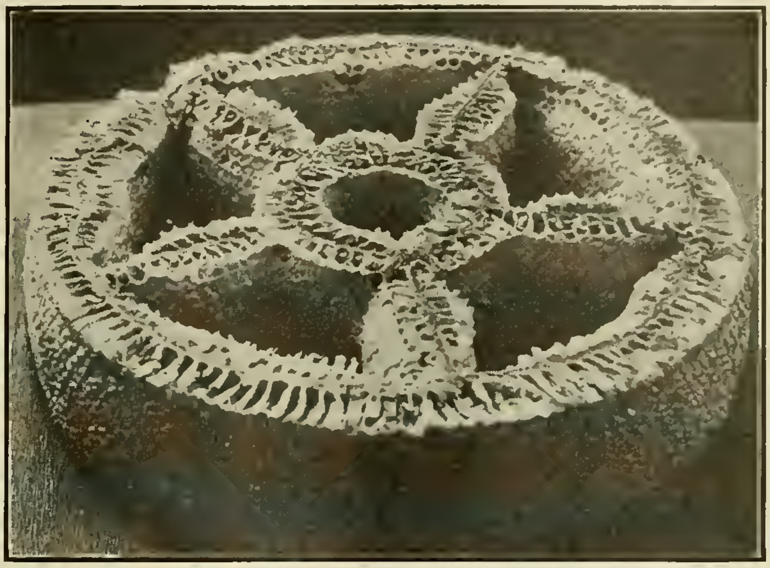


FIG. 3.—COMB HONEY DESIGN OF EDW. WILLBRIGHT.
Which took first prize in its class at the Minnesota State Fair in 1915

Another plan, which our friend intends to adopt with his future bee-management is the construction of bee-sheds holding 14 colonies. Taking my own experience as a guide, I am inclined to think he will see the time that he considers this a mistake. Where will he get his 14 colonies to fill those sheds? To move them back and forth from winter to summer and from summer to winter position requires too much shifting, to say nothing of the inconvenience in handling those sheds on account of their great weight. If he intends to keep them permanently housed, he would obviate this trouble, but for the production of extracted honey it is more convenient to have them placed on separate stands spaced at reasonable distances, which also facilitates all spring and summer manipulations.

My first attempt in making sheds for winter protection did not prove a success as I had expected. I made them to hold 9 colonies, which I found too large for convenience, and consequently used them only one season. When cut in two, making one to hold 5 and a smaller one to hold 3, they served the purpose much better, and if I should have to build new ones, I am inclined to think I would give the smaller one the preference.

I wish to say a few more words in regard to the use of full sheets and especially bottom-starters in sections. I know that a few of our most experienced beekeepers consider bottom-starters of little value for any purpose. Until a few years ago I was a victim of the same error. I considered full sheets of foundation in sections a nuisance (I am not quite over it yet) and bottom-starters a greater nuisance. But since I have made heavy yields my main object, and from all appearances have succeeded, I find that every little help and assistance we can render our bees increases our yield, and bottom-starters are not of the least importance along that line. Next to the increase of yield the great benefit derived from their use is securely attaching combs to the bottom of the section, which prevents breaking loose of combs when shipped or roughly handled, more than being attached to the sides.

The claim that in a good honey season bees make honey and attach combs to the bottom under any management, with or without bottom-starters, cannot be disputed. Seemingly, these little helps do more good in a poor or moderate honey season than in a good one, but a rushing honey flow is just

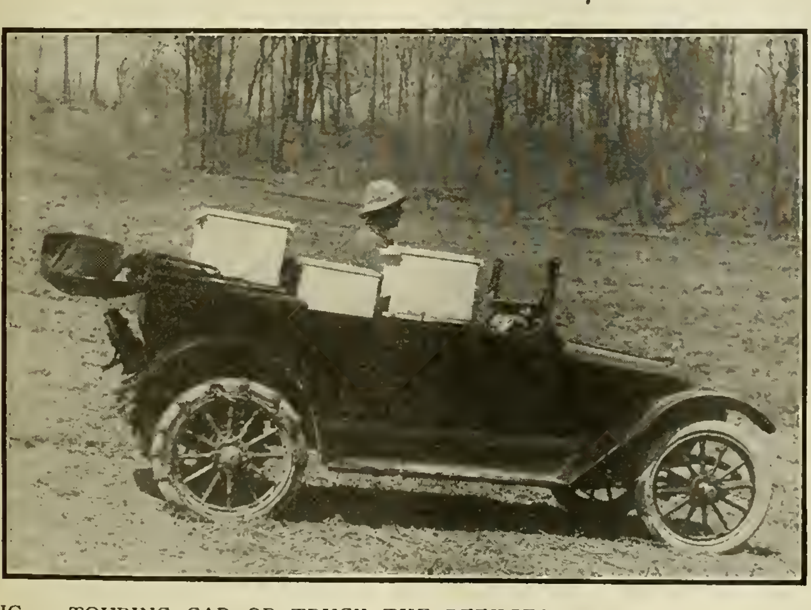


FIG 4.—TOURING CAR OR TRUCK. THE BEEKEEPER SUITS HIS MACHINE TO HIS INDIVIDUAL NEEDS

the one when our assistance, unimportant as it may seem, gives the most paying returns in proportion to our labor. Every little detail must be carefully seen to, to obtain best results.

La Salle, N. Y.

No. 23.—The Honey-Producing Plants

BY FRANK C. PELLETT.

Photographs with this number by M. C. Richter, of San Francisco.

THE acacias are shrubs or small trees which are widely distributed throughout the warmer portions of the world. There are said to be 450 species, of which nearly 300 are native to Australia and Polynesia. We also find references to them in India, Africa and South America. The different species are known by various local names. In Europe some are known as mimosa trees. As sources of honey they are important in Texas, Arizona, New Mexico and California.

The sweet acacia, *Acacia farnesiana*, is found along the Gulf coast in Alabama and as far east as South Carolina. In Texas the huajilla, *Acacia berlandiera*, is an important source of nectar. In fact, according to the Texas bulletin on honey plants, it is the main source in southeast Texas. It grows abundantly on dry and rocky hills which often are not suited to growing agricultural crops. The honey is white and of fine quality.

The catclaw or paradise flower, *Acacia greggii*, is another very important source of honey in the southwest. It is one of the principal sources of dependence in Texas, where it is reported as yielding in April. Arizona reports a later yield, blooming there in May and June. Like the huajilla the honey is light colored and of very fine quality.

We are indebted to M. C. Richter, the well known Pacific coast authority, for the two illustrations which accompany this article. Figure 94 shows the black wattle of California *Acacia decurrens mollis*, which is widely grown as an ornamental in the gardens and along roadsides in that State. It blooms from February to June and produces some honey and an abundance of pollen. Figure 95 shows the silver wattle, *Acacia dealbata*, another widely grown California shrub.

As a family, the acacias are among our most valuable honey producers, although they are confined to the warmer sections. Many of them have delicate fern-like foliage.

Atlantic, Iowa.

Copyright: 1916, by Frank C. Pellett.

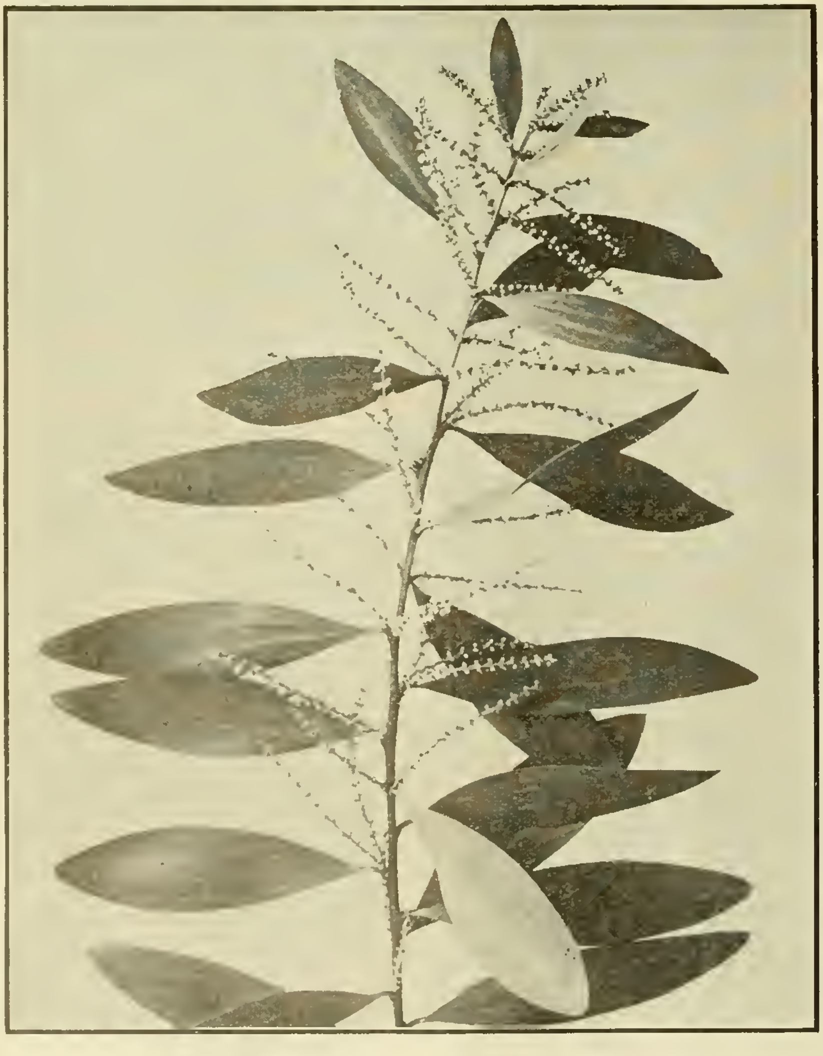


FIG. 94.—ACACIA OR BLACK WATTLE (*Acacia decurrens*)—(Photograph by M. C. Richter)

Bees on the Heather

BY N. TOURNEUR.

FEW British honeys are more esteemed by connoisseurs than that coming from a certain district of the borderland between England and Scotland, where it is gleaned from bean blossom and white clover. Yet, though most delicious and much the most beautiful, it does not sell so well, owing to a lack of strength in the wax, with the result that it runs easily. To remedy this, then, the beekeeper shifts his hives to the far distant moorland, or hills, when the miles of heather are coming into purple bloom.

As soon as the oats begin to turn yellow the change is made. For some weeks previous the beeman has been making preparations, and sending out far-scattered inquiries as to the best tracts of heather of the year; for sending his bees to the moors is an event of great importance to his pocket; and, to many of his kind, living in secluded hamlets of the foot-lands of the Cheviot Hills, it is the great romance, adventure, even, of the twelve months. The journey having to be made during the night, there is a pleasing feeling of danger owing to the wild nature of the road or track and the character of the burden conveyed.

In places near the moors or hills, or only two or three miles away, the hives are carried on stretchers, attended by a convoy of lantern bearers to lay bare the perils of the way and guard the footsteps of those carrying the hives. But when there are many hives, and the distance is great, other means of transport are utilized. Some fortunate beemen are so situated that they can send the hives by train, but they are few. Others, again, greatly daring, have strapped a hive on each side of a steady-going and sedate old pony, or, more preferably, a donkey, and the animal is carefully led along the road and moorland paths. Most generally, however, a long cart is borrowed from a near farmer, usually himself a beekeeper.

After dark, when the bees have given over work for the day, the entrance to the hive is closed by means of the perforated tin or zinc slide, and the hive carefully marked in some secret place to distinguish it from the others belonging to neighbors, also sending theirs to the heather; for beemen are not free from sleight-of-exchange tricks with hives, as the canny borderer may have experienced.

Before the cart or carts arrive an old beekeeper, whose hand and brain are like a calculating machine, so near can he get to the different weights, goes around handling the hives, and merely by the scent of the hive telling its condition. He also closely examines the packing of the hives into the vehicle, for there will be many a jolt on the road where the ruts are deep and the stones large. He can tell of expeditions to the heather where through mishap the horses have been stung to death, and the driver and his companion have only escaped by taking headlong to their heels.

At last, however, at a late hour in the night on account of the desired coolness and, also, that it may not be in the dark of the early morning when the cart comes to the dangerous track on the different moors or heathery hills, the valuable cargo is started on its journey. Often it is late in the morning when it arrives at its destination, the men, horses, and inevitable dog looking very tired.

The shepherd, who for a small sum per hive is to keep an eye on the apiary, is on the spot, and in a short time the hives are set safely inside the disused circular sheep-fold and the bees are let out. In one circling sweep they seem to find their bearings, and settling down to work industriously, are soon coming back with their burdens.

It is seldom the border beeman makes a mistake, and dispatches his treasures to any reaches of purpling heather deficient in the requisite nectar.

He not only certifies his inquiries as to the condition of the heather whether it is moorland or mountain, but can tell at once by the very color of it if there is honey. When he arrives with his bees, if the night has been dewy and the morning balmy, as likely as not he walks through the heather and notices how the pollen whitens his boots, thus enabling him the better to judge of its honeyed conditions.

Sometimes the shepherd has from 600 to 1000 hives in his charge, and, incidentally, his dogs', too, the real guardians of his domain, which may cover from 3000 to 4000 acres of moorland or hilly slopes.

Seldom are the bees on the heather for more than a fortnight. The chilly nights of September bring the beekeepers back for their well-filled hives, and the prospect of probable gains.

Thundersley, England.

Theory vs. Practice

BY A. S. PARSONS.

I DO not want you, dear readers, to get the impression from what I am about to say that I am opposed to education or advanced ideas, so long as they are based on common sense. I am convinced that we as a people or as a nation are depending too much upon theory and losing sight of some of the good lessons taught us by experience and practice.

I will recite a few instances where in my opinion experience does not verify theory. My first experience in feeding alfalfa dates back to about 1887. At that time I was living in Garden City, Kan. I had bought a 5-acre tract of land and had to have a horse and consequently something to feed it. Alfalfa being the principal forage crop I bought a load of the nicest, brightest, green alfalfa hay I could find.

The amount of that hay my horse consumed was wonderful. I could hardly get the harness buckled on in the morning, but by noon it was so loose it looked like it would fall off. I was told this hay was second cutting, cut when just beginning to bloom, just the time when theoretical science is now advising all alfalfa to be cut. They tell us that chemical analysis shows this to be the proper time. I complained and was told I should feed the first cutting, as that was best, so I bought a load of first cutting. When that was delivered I noticed quite a few seed pods and some dry bloom. It was not so bright, and my horse did not eat it so freely, but he gained in flesh and I soon learned I could dispense with grain and keep him in good shape. This was the beginning of observations that have proven to my entire satisfaction that the farmer who cuts his alfalfa before it gets in full bloom is making a mistake.

Only a short time ago we were told by theoretical men that sweet clover was a pernicious weed unfit for anything useful, and I think some States even passed laws making it a penal offense for a farmer to allow it to grow on the wayside. But some "cranks" kept saying it made good hay and would grow where nothing else would, until it simply had to be recognized.

And now I am told that our experts have discovered that our alfalfa is stricken with a disease that is threatening to annihilate it entirely, and that we will never be able to get the crops of honey we have been accustomed to harvesting; but I believe that when we get back to normal seasons we will get just as much honey per acre as ever. The last two seasons in the Arkansas Valley have been exceptionally unfavorable to the secretion of nectar. Time will decide this question.

In the spring of 1903 I came to Colorado and cast my lot with the beekeepers. I shipped in 125 colonies from Texas and got a nice crop of honey. Then came the question of wintering. I was advised to pack them by banking on the northeast and west sides with something dry and put a super on top filled with chaff or leaves. I did so, using the utmost care to do a thorough job of it. About March 1, a neighbor

FIG. 95.—ACACIA OR SILVER WATTLE (*Acacia dealbata*)—Photograph by M. C. Richter

told me he had 12 colonies he would like for me to take care of during 1904. When I went to look at them I found them sitting in a row facing south with a little straw thrown over back of them but otherwise not protected.

As it was a little cool I would not open them, but felt sure there were live bees in all of them. However, I noticed one with a cover so badly warped I could slip my fingers under one side of it. This one I fully expected to find very weak if not dead when I looked them over later. Judge of my surprise at unpacking time when I found my loss to be about 25 percent, and what were alive very weak in bees while all 12 of my neighbor's were alive and the one with the defective cover the best one of the lot. This experience marked the beginning of another set of observations that are proving in my practice directly the opposite of all scientific theory advanced at the present time.

Is not man's intellect making slow progress improving on bees' instinct? I consider all radical changes made in the interior or outside location of a hive of bees *after they are through work in the fall and before they begin work in the spring*, as interfering more or less with their instinct and to be avoided as much as possible.

Theory might prove to most of us that it would be better for the mourning dove to build its nest under cover that it might be protected from the hail storms during incubation; but it would be a difficult matter to convince the dove of the fact.

I am seeking no controversy with any one, only stating matters as I see them.

Rocky Ford, Colo.

Sections Plain or Beeway?

BY E. F. ATWATER.

IN an article entitled, "Sections and Dividers (Separators)—Are They Perfect in Construction?" page 19, Mr. F. Greiner reaches conclusions with which, so far as separators are concerned, we are in complete agreement. Among the first fence separators tested by the writer, were some with upright cleats ½-inch wide, and there is no question whatever that they gave better satisfaction than those with cleats ¼ to 5-16 inch wide, as usually made for some years past.

The "sealing at the edges drawn clear to the separator and attached to the cleat" is something that is found in far too many cases where the usual narrow cleat is used, while with the wide cleats this does not occur, as use will demonstrate to those who wish for a uniform non-leaking product of section honey.

Mr. Greiner says "grave doubt still lingers in my mind as to whether the freer communication the fence gives to the bees as compared to the solid separator is of any advantage." The writer has produced carloads of comb honey, and is sure that the advantage of the free communication given by any open separator is but slight, either to the bees or their keeper, while the openings favor gnawing of the fence by the bees and ridgy surface of the comb honey, while if there is any crowding, the comb may be built out and capped in the opening, or at least attached to the fence. So for many years past the fence has been discarded, and we in common with nearly all of the practical carload producers of honey have turned to the old standard two beeway 4¼x4¼x1⅞ section, entirely satisfied that we get as fine a product, so far as actual marketability is concerned, as can be obtained.

Through this part of Idaho and Oregon where many thousands of colonies are kept, and where the writer was one of the few to first engage in extensive beekeeping, and has had the best of opportunity to observe the growth and development of the industry, the plain section and fence separator were tried for several years, but are, I believe, now discarded by all the extensive producers (even their most enthusiastic advocates of the past) with one exception.

The same appears to be true in Colorado as of the extensive producers there the writer knows none using the fence system. Not that the old standard beeway section is perfect, but none other has yet been developed that has as many advantages.

Now, in regard to the depth of the beeway in beeway sections, Mr. Greiner favors beeways only ⅛-inch deep instead of the usual depth of 3-16 or a a little more. It is true that with the beeway only ⅛-inch deep the surface of the comb is a little better protected from careless handling, but as most supers in use are of the section-holder style (section-holders resting on strips of tin or iron nailed to the lower inside ends of the super), and used with scalloped separators, and as occasionally the end-support of the separator produced by the scallop along its lower edge will break off, the separator will drop down ¼ to ⅜ inch at that end, and if the beeway into the sections is only ⅛ inch, the bees cannot enter the section at that opening, now reduced to ⅛ inch by the separator.

With the usual opening the bees can readily enter, even though all the separators were so broken. Many of our supers contain section holders, and with them we long ago gave up ordering separators with scallops, as in cleaning and use the projecting parts become broken off, when the separators will drop down, often inviting comb-building at the then enlarged space above.

We have our separators for section-holder supers sawed 1-12 inch thick for durability, with no slots nor scallops to favor breakage. The slight increase in thickness makes them far more durable, and contrary to the fears expressed by some, there is no apparent difference in the readiness with which bees enter or work the supers, though with Mr. Greiner's ⅛-inch insets the bees would be barred out.

In our opinion, and the opinion of nearly all producers with whom we have talked, it was a great mistake to "boom" the newer styles and sizes of sections, etc., as there is endless confusion in loading cars made up by several producers, while there is no question that grocers prefer, in the long run, a uniform product, and the consumer actually prefers honey not capped to the edge, after using enough of both kinds to form an opinion. With an "extra fancy" honey all capped to the edge, if as ripe as ours usually is, a hot knife must be used and dipped and wiped twice for each side in cutting such honey out of the section or every cell will be broken.

Meridian, Idaho.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

The Goldens

Now, now, now! You bee people are shaking the very foundations of a pet dream of mine. I had hoped sometime to have a large number of the beautiful golden bees. My experience with them is small, but some of the evils laid to them I saw no indication of. They may not be as hardy as the leather colored, but for gentleness and energy I found them away ahead of my other bees.

I made a great mistake, for I purchased a pound package of bees Sept. 1, hoping they would build up enough to winter. It was not a good fall and the stores were not good. I lost, not only the goldens, but most of the other bees as well with dysentery.

The bees were in fine shape when they arrived. They took possession of their new home and the queen began to lay. I fed the sugar syrup and they were afield every fair day. Robbers from a neighbor's hives were plentiful, but never a one got into the goldens' hive and came out again alive. I could easily tell, for the neighbor bees were dark. They were hived on old comb, which they proceeded to clean up, and they stored considerable syrup and honey. I could handle them fearlessly notwithstanding their vigilance in protecting the hive from robbers. The fall was cold. I put them into the cellar Nov. 1. None of my bees seemed as active and as sweet as in former falls, and very soon dysentery developed. I was too much of a novice to be sure, but I am of the opinion that most of the stores were from honeydew. Before Feb. 1 the bees were dead. The frames were badly stained.

Glover, Vt. HELEN M. MATHIE.

Some speak disparagingly of goldens, while others praise them highly. More than one reason may be offered for this. One reason consists in the fact that only a few years ago goldens did not exist at all, and being a new product the type is not well fixed. As a result, while it is true of any variety of bees that in it may be found good, bad, and indifferent specimens, it might be expected to be especially true of goldens. So when one woman says her goldens are good and another says hers are poor, it may be that the colonies of one may have little resemblance to the colonies of the other except in the matter of color.

Another reason for the difference in valuation may come from a difference in the colonies with which the goldens are compared. Suppose Mrs. A has an apiary of bees that are excellent in every way, and that Mrs. B's bees are the poorest ever, and that each of these women buys a colony of goldens which are of medium quality and just alike. Neither of them having had experience with bees except with the kind already on hand, it is quite natural that Mrs. A should pronounce the goldens inferior, and that Mrs. B should pronounce them superior. "Let each man be fully assured in his own mind."

Still another reason for a difference of opinion lies in the object one has in keeping bees. One keeps bees mainly for profit, and if he finds the leather-colored kind will produce more honey than any other, he will have none of the goldens. Another keeps bees chiefly as a pastime, and to him the beauty of the goldens is so great that he cares little whether they store more or less than others. And to one with an eye for the beautiful it is a matter of real pleasure to work with the golden beauties.

◆

Orange Marmalade With Honey

To every quart of juice and pulp of seedless oranges allow two pounds of honey and two pounds of orange rind. Peel the oranges and boil the rind in water to cover until tender. Then cut into strips with a sharp knife or scissors. Take away the white parts from the juice and pulp, and put it, with the honey and the cooked strips of rind, into a preserving-kettle. Boil until it is of the proper consistency.—*The Christian Endeavor World.*

◆

Stimulation in Spring and Fall

In 1908, when you got 151 sections per colony, did you stimulate your bees to rear brood, or were they strong enough? Do you stimulate in the fall, to increase the number of bees if they have plenty of honey and pollen?

[Mrs.] F. B. Overstreet.
Uvalde, Tex.

We did no stimulating in 1908, nor in a later year when our bees established the world's record for as many as 72 colonies by yielding an average of 266 sections, or 244 pounds, per colony. In the spring we see to it that each colony has not only plenty of stores, but abundance. If any colony lacks in this respect, it is given honey in sealed combs that have been saved for that special purpose from the preceding year. This cannot be called stimulative feeding, for it is all given in a lump. Not very much of such feeding is done, however, in the spring, for it is still better to have the brood-chamber so crowded with honey in the fall that no feeding in spring is necessary.

A colony with a good queen, if there is abundance of honey in the brood-chamber in the spring, will have all the brood the bees can cover, so nothing would be gained by stimulative feeding. Indeed it might do harm, for if small portions of food be given every day or every other day, and the weather is adverse, it may cause the bees to fly out and be lost.

There are, however, some localities where stimulative feeding becomes necessary; a time of considerable duration occurring when there is a cessation of all honeyflow for so long a time that the queen stops laying. If this dearth is only for a few days, and the hive contains plenty of stores, the queen will go right on laying, but if the dearth continues long enough, she will stop laying, and then the beekeeper must try his hand at imitating a natural flow of nectar.

In the fall we have never done anything in the way of stimulation. A good queen needs nothing of the kind, and played-out queens should not be tolerated.

◆

Short Course in Beekeeping Taught by a Lady Beekeeper

The Short Course in Beekeeping I gave early this summer was given on three successive Saturday afternoons, May 27, June 3 and June 10, from 2:00 to 4:30 p.m. The charge for the course was $2.00 each. All but one of the students were novices, and several started beekeeping soon afterward. Ten enrolled for the course, which consisted of a short lecture each time, followed by practical demonstration and manipulation of the bees. I tried to balance theory and practice. Of course, the whole subject could not be dealt with in detail on account of lack of time, but certain subjects, such as swarming and swarm control, comb-honey production, etc., were treated more comprehensively. As field work they were taught to open a hive, handle the frames properly, distinguish the queen, workers, drones, also queen, worker and drone-cells, eggs, pollen, honey, brood sealed and unsealed, and to judge the condition of a colony and its needs; frames were put together, wired, and foundation put in, also section boxes prepared.

The course was held in the shade of a tall spruce hedge very near the beehives; chairs were set three in a row opposite a table covered with equipment behind which I stood while giving the preliminary lectures. By carefully arranging my notes, which I only needed to glance at occasionally, it was astonishing how much ground I could cover.

The course did not pretend to be advanced, but to contain the simple elements of beekeeping.

Josephine Morse.
South Lancaster, Mass.

MISCELLANEOUS NEWS ITEMS

The Illinois Meeting.—The meeting of the Illinois beekeepers at Springfield was one of the best the association ever had, though the attendance was small; only about 35 being present. The 800 or more members of this association should bear in mind that there is much to learn at such meetings.

One of the most interesting talks was that given by E. R. Root, editor of Gleanings, on "Establishing a Trade Name in Honey." Our readers know that the A. I. Root Company has done a great deal of advertising of honey under the trade name of "Airline Honey." They have spent enormous sums, paying as much as $6000 for a full page ad in the October number of the Ladies' Home Journal. But the increase of demand for honey is well marked. Mr. Root insisted on this point, that when you adopt a "trade name" for your honey you give the customer confidence, because he realizes that if you wish to sustain your reputation you must provide satisfactory goods.

Mr. Root is of the opinion that the honey supplied under a trade name should be always of the same color and flavor, and for that reason he is in favor of a blend of the different grades that can be supplied. This is a little easier for a dealer to do than for a producer who does not wish to buy honey for sale. The beekeeper often has only one grade of honey to sell, and it may not be always of the same grade. But we have learned one thing, that it is possible to advertise honey so as to increase sales materially and still make a profit over the expense of advertising.

◆

Jersey Cattle are Advertised.—We received a short time ago from the Jersey Cattle Breeders' Association two excellent photographs of Jersey cattle together with a circular telling of the success of the Jersey special train which left Waterloo, Iowa, for the National Dairy Show at Springfield, Mass.

No doubt the same material was received by all papers on the list of this association, and of course it was expected that a share of them would help advertise this breed of cattle. Unquestionably this has occurred, since a paper as little allied as is ours can use the material in showing how much good can be done by advertising cooperatively.

◆

Conventions Scheduled.—The following bee-meetings have been scheduled to take place as given:

Michigan, Lansing, Nov. 30, Dec. 1-2.
Northwestern, Chicago, Dec. 4-5.
Idaho-Oregon, Ontario, Oreg., Dec. 5-6.
Iowa, Des Moines, Dec. 5-6.
Minnesota, Minneapolis, Dec. 5-6.
New York, Canandaigua, Dec. 5-6.
Wisconsin, Madison, Dec. 7-8.
Ontario, Toronto, Dec. 12, 13, 14.

◆

Special Notice to Subscribers.—High prices have not failed to affect the magazine and publishing business as well as other businesses. Higher prices for paper, inks, and supplies are being paid than ever before.

We are determined for the present, however, to hold our old subscription rate of $1.00 a year. In order to do this and still furnish the same high quality in the American Bee Journal as in the past, we are obliged to cancel from this date all short term cut subscription offers, all combination offers, and all agents' rates. In our advertising columns are given our new combination prices of the American Bee Journal.

APIARY OF F. H. STACEY AT ADAIR, IOWA

Parties desiring to act as agents in getting subscriptions for us, would do well to write us at once.

We would urge all subscribers to renew subscriptions promptly on expiration, to save us sending needless renewal slips, notices, etc. If you want to discontinue, let us know it. We hope, however, that we have made the American Bee Journal of such value that you will not want to do without it.

You can help us and yourself by urging neighbor beekeepers to take the American Bee Journal, and by getting their subscription for us. Subscribers to bee-papers are not usually the beekeepers who make cut rates on honey to get rid of their crop. Such subscribers also know how to handle disease.

◆

More Missouri Press Bulletins.—Press Bulletins Nos. 239 and 242 of the Missouri College of Agriculture, and written by L. Haseman, Entomologist, have been distributed to the papers of the State.

The former is entitled, "Taking Honey from the Hive," the latter, "Bees Must be Protected to Survive the Winter in Good Condition."

Dr. Haseman has the interests of the Missouri beekeepers at heart. With his cooperation the Missouri society should soon be in a position to demand adequate legislation and better education on beekeeping matters.

◆

Dierrhea Preventive.—A Wisconsin subscriber, Mr. C. W. Aeppler calls our attention to a remedy tried and recommended in the September "Schweizerische Bienenzeitung" (Swiss Bee Journal) by G. Landolf. It consists in adding a small quantity of peppermint to the winter stores. He says that since he has used that preventive he has not noticed any diarrhea. We will look further into this matter and have asked Mr. Spuehler, of Zurich, for an opinion concerning this remedy.

The New Miller Book.—The new book "Dr. Miller's Thousand Answers to Beekeeping Questions," now in preparation, will not be ready for delivery until February. In order to let our subscribers take advantage of the combination offer of this new book with American Bee Journal one year, we are listing the same in the advertising columns of this Journal.

As the Miller book is to be sold only in combination with a year's subscription we urge our subscribers to consult the advertising paper before ordering.

◆

Mexican Stingless Bees.—According to the American consul at Vera Cruz, Mexico, it is generally believed there that wild honey possesses medicinal properties, particularly that from a small stingless bee about the size of the common house fly, says an exchange. This produce is highly prized. Sometimes this little bee is domesticated, and in such cases gourds are used for hives. The wax is usually dark, and even black in color. The wild bees form their nests in hollow trees, in fissures of rocks, and in holes in the ground, each species showing peculiarities in the selection of the locality. A species of wild Mexican bees locally named cuita, is of a dark color. Of this bee it is said that when angry it will discharge a liquid that will produce an itching sensation if permitted to touch the skin. Another kind of wild bee found in Mexico is a small yellow stingless one called zal. Then there is a kind known as the zicole, which builds its nest in the ground or in cracks of walls and rocks. Its honey is of fine quality, but its sting is much dreaded. One variety of wild bee constructs its nest like that of the wasp, attached to the limb of a tree. The honey is said to be of excellent quality.—*Exchange.*

◆

National to Meet in February.—The directors of the National Beekeepers' Association have decided to hold the next meeting of the National at Madison, Wis., in February, date of meeting to be announced later. The officers have commenced on the program, and will take up matters of importance to beekeepers all over the country.

F. ERIC MILLEN, *Sec.-Treas.*

◆

Wisconsin Meeting.—The Wisconsin State Beekeepers' Association will meet in annual convention in the Assembly Room in the Capitol Building, Madison, Wis., Dec. 7 and 8. An interesting program will be presented, and we are looking for the largest attendance at this time, although we had an attendance of about 150 last year. We expect Dr. Phillips and other prominent beekeepers to be there. Headquarters will be at Simons' Hotel.

N. E. FRANCE, *Pres.* GUS DITTMER, *Sec.*

◆

Nature Books.—This office is in receipt of two books with the titles "Ginseng" and "Science of Trapping."

They are well bound books and treat the subjects under discussion fully. Ginseng culture is carried on quite profitably by a number of people, and a book on its culture is of no little value to anyone interested. The Trapping book sells at 60 cents and the Ginseng book at $1.00. They may be had by those interested by addressing letters to the publisher, A. R. Harding, of Columbus, Ohio.

◆

Idaho-Oregon Honey Producers' Association to meet. The annual stockholders' meeting of this association will be held in the City Hall Assembly Rooms, Ontario, Oreg., on Tuesday and Wednesday, Dec. 5 and 6. The first day's session will be given over to the election of directors for the coming year, and reports of this season's work, while the second session will be more in the nature of a social one, discussions relative to honey production being in order.

All beekeepers in this territory are cordially invited to attend.

P. S. FARRELL, *Sec.*

◆

The Yorkshire Honey Harvest.—A contributor to the Yorkshire Post reports as follows on the honey harvest in the Leeds, England, consular district:

Yorkshire honey is likely to be very scarce this season. The heather is fully a fortnight late in blooming, and this in itself nearly always means a poor yield of honey from the moorland apiaries. The heather bloom of the north Yorkshire moors is very poor, indeed; in fact, the higher reaches are practically devoid of bloom, and it is the higher altitudes that produce the best and largest crop of honey.

The yield is bound to be small, and one beekeeper of long experience estimates that 10 to 15 pounds per hive will be a very good yield for the season. More than half the colonies taken on the moors will not give any surplus at all.—*United States Consular Report.*

◆

Chicago-Northwestern Meeting.—The 20th annual meeting of the Chicago-Northwestern Beekeepers' Association will be held in Room 138 of the Great Northern Hotel, Chicago, Dec. 4 and 5. A partial program is as follows:

"Marketing Honey," N. E. France, Platteville, Wis.

"Extension Work in Beekeeping," Dr. E. F. Phillips, Washington, D. C.

Louis C. Dadant, subject unannounced.

"Displaying Live Bees in Chicago Groceries," Kennith Hawkins, Plainfield, Ill.

"About Heating and Clarifying Honey," Edward Hassinger, Jr., Greenville, Wis.

Prof. Jager, president of the National, will be in attendance, also others will be on the program, and the question-box will be a strong feature.

JOHN C. BULL, *Sec.-Treas.*

◆

Beekeeping Course at Rutgers, New Jersey.—The need for and the opportunities in honey production are so large in New Jersey that Rutgers' College has decided to offer a short course in bee husbandry.

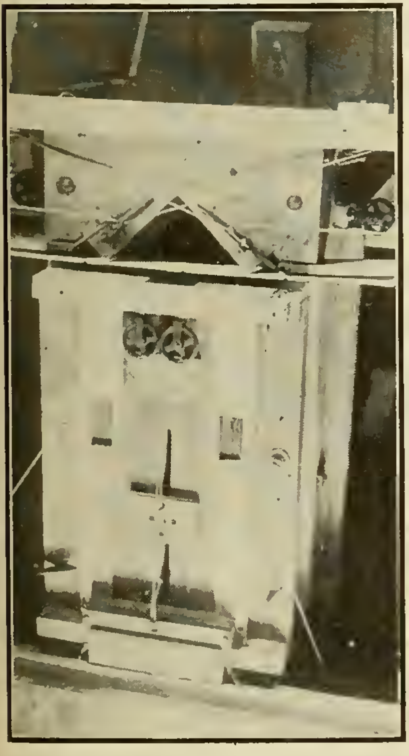
It is believed that nine-tenths of the nectar annually secreted is lost through lack of properly managed bees to gather it. It is known that tons of honey is annually brought into this State to supply local needs, and that practically no effort is being made to increase the use of honey. In view of these facts the splendid opportunity for profitable honey production in the State are apparent. Many have started producing honey without training and with such a small number of colonies that success was impossible.

The largest honey producer in the State has but 250 to 300 colonies of bees representing an investment of not over $3000, and the net proceeds average $1500 annually. One active man should be able to do all the work in handling 300 to 500 colonies with the help of unskilled labor for two or three weeks during extracting time.

That this splendid resource of the State may be developed, Rutgers' College will offer a short course in bee-husbandry provided as many as four persons apply for the course. This course is planned to give the student a practical knowledge of profitable bee-husbandry. Any one after completing the course and after having spent one season in a commercial apiary will be fitted to profitably conduct a honey-producing business.

Full particulars regarding this course can be had by addressing Prof. F. C. Minkler, Director Short Courses in Agriculture, New Brunswick, N. J.

THOMAS J. HEADLEE,
State Entomologist.



AUTOMATIC SECTION FOLDING MACHINE OF R. W. ADAMS, OF UTICA, N. Y.
To fold a section, drop in position as shown and press foot pedal; let up pedal and the section drops automatically into a box

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Miscellaneous Questions

1. Will you fully explain the top-most paragraph on page 777 of Gleanings, Sept. 1. Aside of this, I have always been deterred from trying to rear queens from best colonies because of fearing that I would lose too much while the bees were gathering honey.

2. When shaking bees off of frames I have a board in front at the entrance on the ground. Would a sheet of muslin be enough better for me to make a change to same?

3. In case you came to an apiary where early in the season an extra deep body had been placed over the brood-chamber, and about all such colonies had above four frames of honey heavy but not capped, and two frames of brood, and there was also a lot of honey below and you had no place to keep the honey frames, how in reducing the colonies to one hive-body would you manage?

4. Please state the principal reasons why it would be well for a comb-honey man to have and use an extractor; could such, meaning to meet all conditions to the very best, be at all able to get along without one?

5. When one has so very many frames in the midst of the season filled with honey, and they are extracted so as to facilitate queen laying, is it of any essential importance that the cells be perfectly cleaned out of honey or will it suffice in the condition as left by extracting?

6. Is there any good in removing burr-comb from the top of brood-frames in hives, aside of mere looks? PENNSYLVANIA.

ANSWERS.—1. I don't understand just what it is you want explained, but I don't see any need to be deterred from breeding from the best queen because of interference with the honey crop. You need only to take a few larvæ out of a comb, or at most cut out a piece of comb, not at all interfering with the amount stored. But it is a matter of such great importance to breed from the best, that I don't mind how much I interfere with the storing of that particular colony, even if it should break it up entirely. When a colony has made its record by its performance the preceding year, and it is decided that it is the right one to breed from, I keep that queen in a nucleus, both because it is a matter of convenience and because the queen is likely to live longer. This will interfere with the storing of one colony, but in the long run will increase the storing of all.

2. If the board is made so that there is a clear track for the bees to travel, without any cracks or breaks, it ought to be better than a sheet.

3. If there is nowhere else for them, they can be piled up on a colony—perhaps pretty weak—whose duty it should be to care for and cap these combs.

4. I know of no reason why he should necessarily have an extractor, unless he wants

extracted honey. I got along many a year without one; so can you.

5. The bees will use them all right if left quite wet. Indeed with a vigorous queen the bees might empty the honey in the middle of the brood-chamber without its being extracted; and this may be additional answer to your third question.

6. Yes, indeed; if left from year to year it is likely to become worse and worse, one trouble being that bees are thereby killed in your manipulations, even if you care nothing about the daubiness and stickiness.

Keeping Bees—Colony

1. Can bees be kept in a back yard about 100 feet square where there are plenty of flowers and clover around?
2. What is a colony?
3. What is the best bee-pasture in this State? NEW YORK.

ANSWERS.—1. You should be able to keep bees in the back lot without trouble, provided care is taken to keep them from disturbing the neighbors.

2. A colony comprises the bees of a hive, the combs, and the hive in which the bees and combs are domiciled.

3. White and alsike clover and buckwheat are likely the best producers in your section. Basswood and sweet clover may also figure.

Using the "Coaxer"

In referring to a "coaxer" described on page 347, October, 1916, what way, if at all, could the use of same be combined with the practice of giving early in the season a second full depth super to colonies in a forward condition? It seems almost to me that one would be compelled to choose between the two, one seeming in conflict with the other. PENNSYLVANIA.

ANSWER.—It is possible that it might work to put the "coaxer" under the second story at the time of giving the second story, and then when the harvest comes to take away the second story, put on the section-super, and put the "coaxer" over.

Feed and Feeding—Wintering

1. What is the best and safest food for bees in winter besides honey?
2. Do you think outside wintering is the best for bees if I give them protection?
3. What is the best way of feeding bees in winter? WISCONSIN.

ANSWERS.—1. Granulated sugar dissolved in water, about half and half if fed early in September, and about five sugar to two water if fed after the middle of October.

2. Hard to say. In general cellaring is safer in Wisconsin, but there may be exceptions. Find out which way is most successful with experienced beekeepers not far from you.

2. Give frames of sealed honey.

Queen-Cell—Granulated Honey

1. How old must a queen-cell be before you can take the royal jelly to graft cells?
2. If a hive-body containing frames of honey is left on top of a colony all winter, will the bees move up into it?
3. Will comb honey that is produced this season be granulated by the first of next June? IOWA.

ANSWERS.—1. You can take an unsealed cell of any age, but you will get more jelly if you take one nearly ready to seal.

2. They may if all the honey is used up in the lower story.

3. Like enough; especially if not kept in the best way.

Comb or Extracted ?—Wiring Frames

1. I have ten colonies of bees and want to increase them next year, and I am undecided whether to go into the comb or extracted honey business. I would like to have your advice as to the profits in one over the other.
2. If I use full depth supers with full sheets of medium brood foundation in metal spaced Hoffman frames, will I have to wire the foundation in both hive-bodies and supers? MISSOURI.

ANSWERS.—1 That's an exceedingly difficult question to answer. In general it may be said that it requires less skill and experience to produce extracted honey than comb. Also that generally more extracted honey can be produced than comb. On the other hand, the price of comb honey is usually higher than that of extracted. Perhaps it will not be out of the way to say that in general 50 percent more extracted than comb can be produced If that be the case with you, and you can get two-thirds as much for extracted as comb, then you will do as well with one as the other. But if you can produce more or less than two-thirds as much comb as extracted, then you would decide differently, as you also would if there should be little difference in price. If you will tell me how much of each you can produce per colony, and what price you can get for each, then I can tell pretty well which will be best for you.

2. Yes, unless you support the foundation with splints.

Bee Eggs—Liquefying Honey

1. Do bee-eggs freeze here in winter, and at what degree should I keep the eggs in cells?
2. Can you give me some information on how to hatch bee-eggs in an incubator?
3. What is the best way to make good honey out of granulated honey?
4. Can you give me addresses of Belgian beekeepers who have come to the United States since 1914? MONTANA.

ANSWERS.—1. I doubt if they ever do freeze, partly because there are not likely to be any eggs in the hive in winter, and if there were the bees would keep them warm. I suppose you could keep them for a little while anywhere above freezing, but I can't see that it is of any practical consequence.

2. No; I never heard of bees' eggs being hatched in an incubator, and very much doubt if it can be done.

3. If good honey granulates, it is still good honey I suppose you mean how to make it liquid. A good way to do that is to set the vessel containing the honey in a larger vessel on the stove, the larger vessel containing hot water, with a little board or something else under the honey-vessel, so that it cannot rest directly on the bottom of the larger vessel.

4. I don't know of any, but possibly some of them, seeing this, may respond.

Honey—Is it Beneficial?

I was just looking over an old paper, and came across an article headed: "Honey Aged Man's Friend." The article stated that you were 84 years old and had used honey very liberally all your life, and that you used honey in your coffee.

I expect to complete my course in medicine soon, and am trying to get what is beneficial in any medicine foods or drinks, and I assure you that any suggestions that you will be good enough to give me will be highly appreciated and gratefully received.

Can honey be used with any kind of foods, and would it not be beneficial for ulcers of the stomach and intestines? ILLINOIS.

ANSWER.—Sugar in honey and fruits is Nature's way of supplying that important article of food; and the substitution of cane sugar and beet sugar therefore—a substitution that has taken place not so many centuries ago—has probably not greatly lengthened human life. We are told that in the United States the consumption of sugar averages more than 80 pounds for every man, woman, and child. This sugar must be inverted before assimilation, and this inversion is something of a tax upon the digestive organs for those who consume the average quantity of sugar. But many use more than the average quantity, some of them very much more, and for them the substitution of honey for sugar might mean the saving of health, possibly of life.

Another item worth considering is the presence in honey of minerals which, although small in quantity, are important for the proper sustenance of the body, being present in honey in the most available form, and altogether lacking in sugar.

I have not been a regular honey-eater all my life—more's the pity. Like many others, even among physicians, I was not fully aware of the very wholesome character of honey as compared with ordinary sugar. But for a good many years I have used honey as a daily article of diet, and I am confident that it is partly owing to this fact that I am almost entirely free from digestive troubles, and at 85 enjoying life as much as at 45—indeed I think more.

To the question whether honey may be used with any kind of foods it may be replied that it may be used in general wherever sugar is used. It may be used in any kind of drink, hot or cold, care being taken that the flavor of the honey shall suit the individual taste, for there is no small difference in the flavors of different honeys, and a good many might object to the darker and stronger-flavored samples, especially in drinks that are hot. Honey may be substituted for sugar in baking, due allowance being made for the fact that honey contains something like 20 percent of water, and so using less liquid.

I do not know whether honey has any specific effect upon ulcers of stomach or intestines, but in a general way it should be favorable as making less demand than sugar upon the powers of the digestive organs.

Getting Bees Out of a Tree

How can I get a swarm out of a bee-tree? It is an old spruce about 18 inches through, the cavity being about 10 feet up. When is the best time to get it? WASHINGTON.

ANSWER.—Each case of getting bees out of a tree is something of a problem by itself, and some gumption is needed. In this case it would seem the first thing is to fell the tree, and some judgment may be needed so as to fell it with the least jarring. If on a side-hill, it will be better to have it fall uphill. Perhaps other trees stand near, so its fall can be partly broken. Then cut off the log close above and below where the bees are, split it open, and the bees are at your mercy. Use enough smoke to keep them in subjection, although so much jarring may make smoke unnecessary. Of course you will now proceed just as your book directs to proceed with a box-hive.

I don't know enough about the climate in your locality to say when is the best time to operate. You might cut the tree almost any time if you have warm spells so that bees fly freely. Yet if you are not afraid some one else will get ahead of you, it might be well to wait until spring.

Partnership Apiary

I would like some information in regard to beekeeping on shares. For example, A has 40 colonies of average grade bees in 1½-story hives, which are the offspring of one colony caught some seven years ago. These bees are located on A's 40 acre farm with other bees in small apiaries ½ mile distant. The farm and adjoining farms are producing mostly alfalfa crops.

A, having not given much attention to hiving, has let the apiary take care of itself resulting in most of the colonies building crosswise in frames, as no starter was provided when new swarms were caught. About one-half the colonies have done little else than live this season, and the total increase is ten swarms for this season, and about $60 worth of honey from the 50 colonies.

In June last A proposed to B that B care for A's bees on the co-partner plan of equal shares in the profits (increase being considered a part of profits), B to stand labor, expense except selling, which was done by both A and B. Later A proposed that B take one-half interest in the original 40 colonies on account of the extra work to put them in shape.

Now it appears to B that if he keeps A's bees for a term of years on this share and share alike plan (labor to be done by B) in a few years this plan would favor A to such an extent that B would be forced to quit.

So far very little else than section honey has been produced There are no tools, worth considering, furnished by A. B thinks he should take his half of the increase away so that he will not have to divide their increase and honey next season? How about B's interest in the original 40 colonies? B thinks that he would be giving too much the next season to leave them in the partnership apiary, while A thinks not.

Both parties are anxious to find a fair plan. A has not the time nor experience to care for bees, while B intends to build up this apiary and operate it in connection with other outapiaries. Any suggestions that would be fair to both parties will be very much appreciated. WASHINGTON

ANSWER.—The mix-up is new to me, and I am not sure I know enough to advise. But if I understand correctly, the agreement is that B gets half the crop and half the increase. If the arrangement were to be closed up at the end of the first year, then B would take away half the increase as his own property. Then if a new bargain were made for the next year, B's bees would hardly be considered in the transaction, and I hardly see how the case is any different if the arrangement continues from year to year. In other words, if B gets half the increase, that half is his own private property, and A has in it no claim whatever.

Bait in Sections

What is the least quantity of baits to be used in sections in a super of 32, to do the full good? PENNSYLVANIA.

ANSWER.—That depends on what you mean by "full good." The chief thing is to get the bees *started* in supers, and for that purpose I'm not sure that a single bait is less effective than a superful. If you mean to get the most honey possible, then the more baits the better, since of course bees will store more when saved the expense of making comb.

A Beginner

1. I have an old stand of bees in an 8-frame hive which I would like to transfer in the spring, but I do not know exactly how to do it to receive the best results, and would like to have you explain in full.

2. Is a queen and drone trap successful or not when a swarm stays on the outside of the hive, or do a lot of the bees go back into the hive again?

3. When you unite swarms is there any danger of them getting out the next day?

4. What causes them to destroy the sealed brood when they are united with a colony that has several combs of sealed brood?

ILLINOIS.

ANSWERS.—1. You want me to explain in full, and to do that I should have information in full, which you fail to give. All I know is that you want to transfer from an old 8-frame hive, but I don't know the size of frames the bees now have, although I am pretty safe in guessing that you want them in frames of Langstroth size. If they now have that size, 17⅝x9⅛, and you merely want to transfer from an old to a new hive, all you have to do is to give the bees some smoke, and then lift the combs, bees and all, from the old hive, and put them in the same order in the new hive. If you want to transfer into frames of different size, then just what is to be done depends upon the sizes of the old and the new frames. If the old frames are larger than the new, then cut out the comb, lay the new frame upon it, and cut to fit the inside of the frame, making the fit rather tight, and then tie strings around it. To do this latter easily, cut several strings, perhaps four or five for each frame, and have the strings long enough to reach around the frame from top to bottom, and then enough string to tie easily. Lay these strings upon a board in order, lay the comb upon the strings, put on the frame, and then tie. Better not try to lift the frame and comb from the board, but lift up the board with the frame on it so the frame will be in the right position, with top-bar up and then you can lift the frame.

2. A queen-and-drone-trap is successful in holding prisoner a queen that attempts to pass out with a swarm. When the swarm returns, a good many of the bees will cluster outside, but gradually they will go back into the hive, unless it be so warm that they prefer to hang out.

8 There is hardly any more danger than there is of a single swarm leaving the hive if it is too close and warm.

4. I don't know. I don't think I ever knew a case of that kind, although it might happen with drone-brood. In that case it would be killed when no longer needed.

Wintering—How to Make Bees Work in Supers

1. We are using 10-frame hives Is it advisable to leave all ten frames for winter stores, or how much honey does the average colony need from October to April?

2. I have had trouble in getting some colonies to build in the supers. They had plenty of bees and honey in the lower box, but would not do anything in the supers.

3. Why will some colonies swarm when they have plenty of room, not even working in the supers?

4. Will bees work better in large or extracting frames than in sections?

ILLINOIS.

ANSWERS.—1. What you need to know is not how much the average colony needs but how much is needed by the colony that uses the most. Suppose you knew that the consumption by your bees the coming winter and spring would average 25 pounds, and you made sure to have 25 pounds of honey in each hive. The result would be that you would lose about half your colonies from starvation. For there is a big difference in the amount of stores consumed by different colonies, and you cannot tell beforehand which the big eaters are; and so the only safe course is to consider every colony a big eater, and provide accordingly. In your case it will probably be wise for you to leave not less than 30 pounds to each colony, and 35 may be better. Some would even prefer 40. You see there will be no waste if you give them five or ten pounds more than they need, for it will save their using just so much of the new harvest to fill up the brood chamber before storing in the super. Leave the whole ten frames for winter, with all the honey the bees have stored in them.

2. If sections are in the super, then you need to put in the first super given to each colony a bait section; that is, a section that was partly built out the previons season, and emptied by the bees in the fall. If the super contains extracted combs, then either the colony is not strong enough or else there is not honey enough to fill the brood-chamber and send a surplus above.

3. Hard to tell. Indeed, it is not entirely understood just why bees swarm at all, and such cases as you mention may occur for more than one reason.

4. It is generally believed that they will.

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Wanted—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

Wanted—Extracted honey in any lots. Send sample and prices. Ed Swenson,
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Wanted—Comb, extracted honey, and beeswax.
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Honey Wanted—We are in the market for light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
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Wanted—Cheap honey extractor in good order. J. D. Sherwood, Ft. Madison, Iowa.

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Chicago, Nov. 17.—Quite heavy receipts of comb honey have come on the market and it is slow of sale, or apparently so, on account of the quantity.

The best grades of white comb are bringing 13@15c per pound; off grades from 1@3c per pound less. Extracted is selling well and there is no excess of supplies. The best white grades are bringing 9c per pound, and those off in color or flavor are bringing 8c per pound. The best grades of light amber 7½@8c per pound with darker grades ranging from 6@7c per pound.

Beeswax, if free from sediment and good color 32c per pound. Dark grades 28@30c per pound. R. A Burnett & Co.

San Antonio, Nov. 15.—No bulk comb honey is being offered by producers, all stocks being practically cleaned up. Supplies of extracted honey are also about exhausted. No carload quantities are being offered. We have not had such a complete clean up of surplus honey in years. Prices to wholesale trade for choice honey rules at 8@9c basis. Fall honey flows did not materialize. Beeswax prices are firm, 27c cash to 30c exchange basis.

Southwestern Bee Co.

Kansas City, Mo., Nov. 16.—Our market is very slow on comb honey, same selling around $2.75 to $3.90 for No. 1, and $2.50 to $2.65 for No. 2. Extracted honey is moving slowly at 8c a pound for amber and 9c a pound for white clover. Good No. 1 beeswax is selling at 25c a pound.

C. C. Clemons Produce Company.

Denver, Colo., Nov. 10.—We are selling new crop comb honey in the local market at the following jobbing prices; Fancy, per case of 24 sections, $3.38. No. 1, $3.15; No. 2, $2.93. White extracted, 8½@8¾c per pound; light amber, 8@8¾c per pound, and amber 7@8c per pound. We pay 26c per pound in cash and 28c per pound in trade for clean, average yellow beeswax delivered here.

The Colo. Honey Producers' Ass'n.
F. Rauchfuss, *Magr.*

Cincinnati, Nov. 16.—The demand for comb honey is not as good as it was last season. We are selling No. 1 comb honey, 24 sections to the case, at $3.75 per case; lower grades are not wanted at any price. White clover extracted honey in 60-pound cans at 7½@9c Amber extracted in barrels from 6½@7½c. The above are our selling prices, and we buy at less than the above prices.

We are paying 28c a pound for choice bright yellow beeswax.

The Fred W. Muth Company.

New York, Nov. 18.—The new crop of honey from nearby is now beginning to arrive in small lots, but the market is still unsettled, and prices are not firmly established. We are of the opinion that comb honey will sell as follows:

Number 1 and fancy white, 14@15c; No. 2 and amber 12@13c; buckwheat and dark, 10@11c. Extracted white clover, 7@7½c; light amber, 6½@7c; buckwheat, 6½@7c, and West India honey continues to arrive quite freely and prices are ranging from 58@62c per gallon, according to quality.

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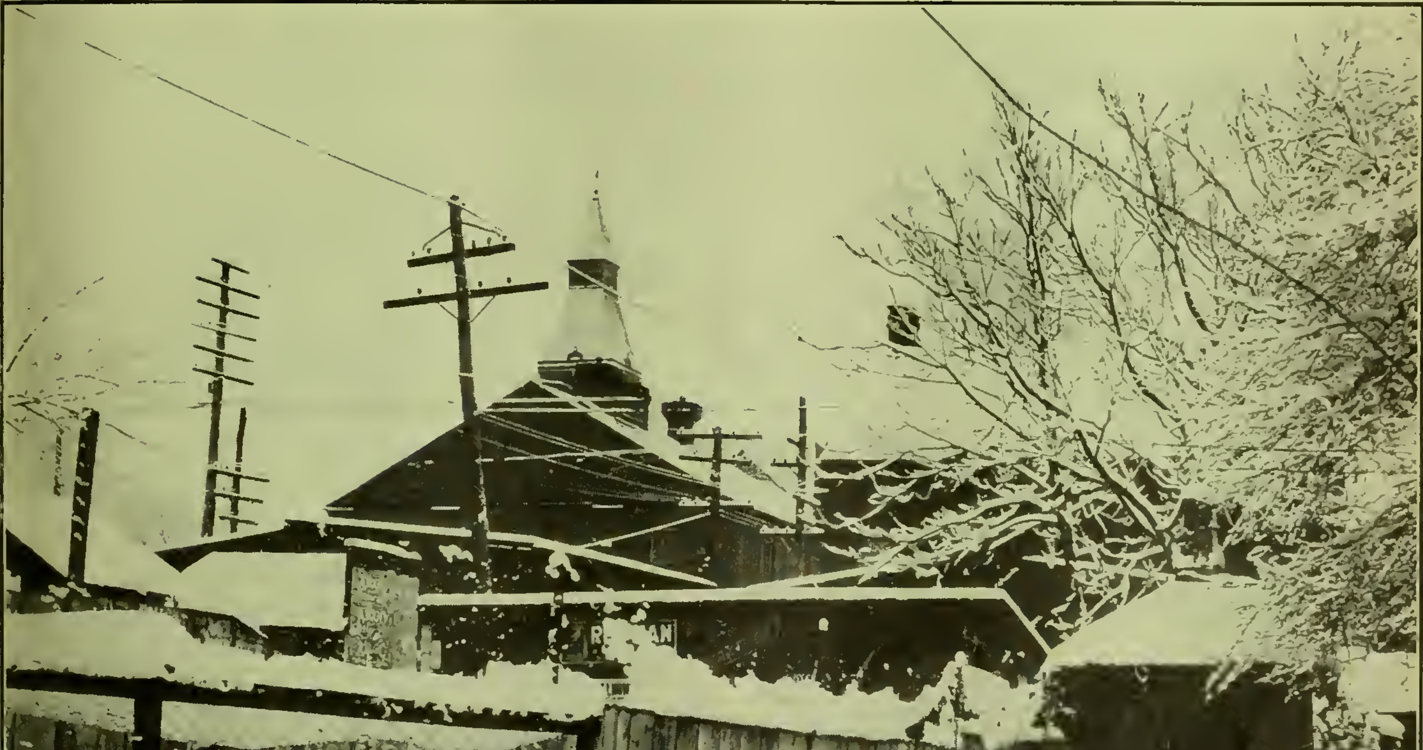
JANUARY, 1917



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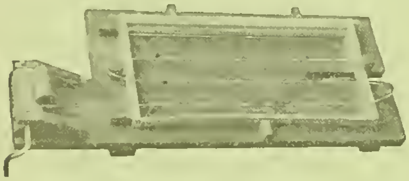

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Read what J. I. Parent of Chariton, N. Y., says. "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

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Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

THE PENN COMPANY, Penn, Lowndes County, Mississippi

Representatives of The A. I. Root Company, and Queen Specialists

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MADE IN U.S.A.

SHOOTING QUALITIES WARRANTED

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Shot flatten when driven at this high speed into an improper choke.

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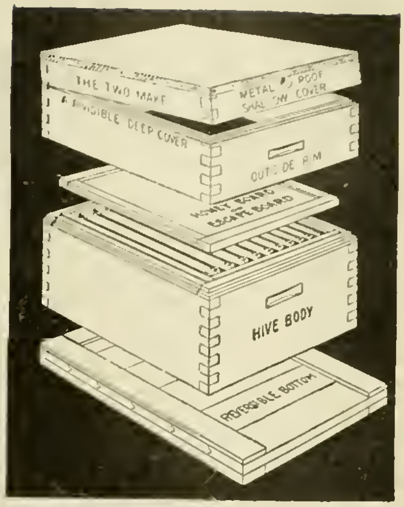

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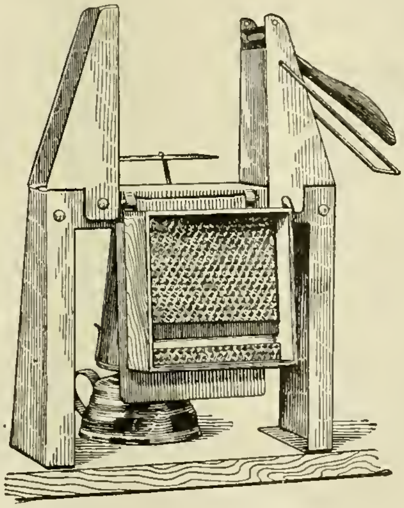

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Smoke Engine, 4-inch stove	28 oz.	$1.25
Doctor, 3½-inch stove	26 oz.	.85
Two larger sizes in copper extra.		.50
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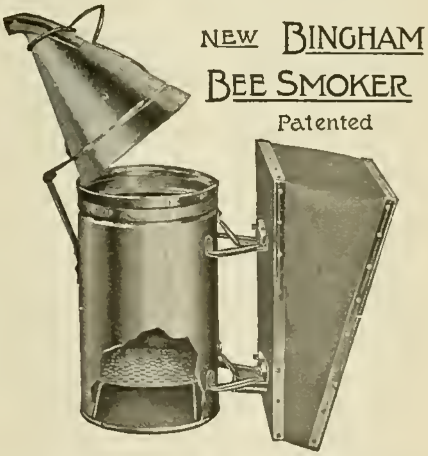
Little Wonder, 2½-inch stove	16 oz.	.50

Hinged cover on the two larger sizes postage extra.



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Patented

A. G. Woodman Co., Grand Rapids, Mich.

American Bee Journal one year, $1.00
Langstroth on the Honey Bee, Rovised, $1.50
Send this office $2.00 and get both postpaid

FOR SALE 1000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

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As we are large honey producers as well as queen breeders, producing from one to two carloads of honey annually, we have ample opportunity to test out our breeding stock, used in our queen yards. Thus we are able to guarantee that all our queens will give satisfaction in every respect. If you want bees that are gentle as well as great honey getters let us book your order.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.20 each; 50 to 100 pkgs. $1.15 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.20 each; 50 to 100 pkgs. $2.15 each
3-lb. pkgs $3 25 each; 25 to 50 pkgs. $3.20 each; 50 to 100 pkgs. $3.15 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested	75 cts. each;	$65.00 per 100	Tested	$1.25 each;	$110.00 per 100
Select untested	90 cts. " ;	$75.00 " 100	Select tested	1.50 "	125.00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

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The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

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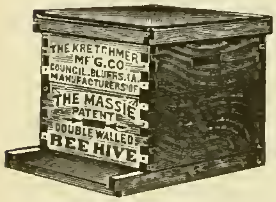
Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.


THE KRETCHMER MFG. CO. COUNCIL BLUFFS, IA. MANUFACTURERS OF
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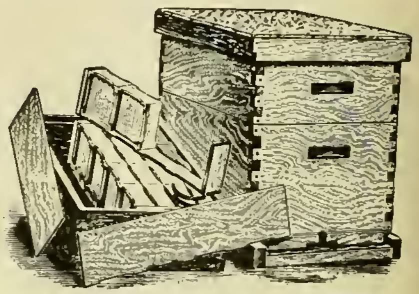
DOUBLE WALLED BEE HIVE

THE MASSIE HIVE

For Comb or Extracted Honey



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We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

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Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3-lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 100	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders the day they are due We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States and Canada. Place your orders early, as first comes first served. Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

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Don't make the mistake of putting a fine lot of section honey in poor shipping cases. It will lower the price to you and damage your future sales. **"falcon"** cases are A No. 1, and will be a credit to any crop of honey. Prices are as follows:

Shipping Cases in Flat, Without Glass

No.		10	100
1	..................holding 24 sections, 4¼x1⅞, showing 4	2 00	18 00
3	..................holding 12 sections, 4¼x1⅞, showing 3	1 30	11 00
1½	..................holding 24 sections, 4¼x1½, showing 4	1 90	17 00
6	..................holding 24 sections, 3⅝x5x1½, showing 4	1 80	16 00
8	..................holding 24 sections, 4x5x1⅜, showing 4	1 80	16 00

Shipping Cases, With Glass

Number and description	Nld	In flat, with 3-in. glass			With 2-in. glass
		1	10	100	100
11 Same as No. 1................	.35	.25	$2 30	21 00	20 00
13 Same as No. 3...........	.22	.15	1 40	12 50	12 00
11½ Same as No. 1½..............	.35	.25	2 20	20 00	19 00
16 Same as No. 6................	.30	.22	2 10	19 00	....
18 Same as No. 8................	.30	.22	2 05	19 00	....

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

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Where the good bee-hives come from

Beekeepers' Supplies

Now is the time to order your supplies for next season, and have everything in readiness for next spring. Take advantage of the early order cash discounts, and send us a list of the supplies wanted, and we will be pleased to quote you. We will mail you our catalog upon request; in short, we handle everything a beekeeper requires for the proper conduct of an apiary—Root's goods at factory prices.

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JOHN M. DAVIS

1917 Queen Prices

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Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
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SUPPLIES FOR THE WINTER SEASON

Having purchased supplies early, I am able to sell the BEST DOVETAILED hives, five 8-frame 1½ story for $10, either super. Other hives and supplies. Let me figure on your wants. Italian Bees, Queens and Nucleus for the 1017 season.

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Lewis Beeware

YOU GET

LEWIS QUALITY Which means that all Lewis Hives are made out of clear white pine, and Lewis Sections made out of fine bright basswood. Material in these goods is the best obtainable, selected by experts.

LEWIS WORKMANSHIP The Lewis Factory is equipped with the latest improved machinery, constantly watched by experts. The Lewis head mechanic has 40 years of bee supply experience; the superintendent of bee-hive department, 33 years; the superintendent of sections, 32 years. These and many other skilled men have a hand in all the Lewis goods you buy.

LEWIS PACKING All Lewis Beeware is carefully and accurately packed—a patent woven wood and wire package made only by the Lewis Company is employed largely in packing; this makes the package light, compact and damage-proof.

LEWIS SERVICE Years ago all goods were shipped direct from the factory with attending high freight rates and delays during the honey season. NOW Lewis Beeware can be obtained almost at your own door. Over 30 Distributing Houses carrying Lewis Beeware by the carload are dotted all over the United States and foreign countries.

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 1 HAMILTON, ILL., JANUARY, 1917, MONTHLY, $1.00 A YEAR

SEVENTY YEARS OF BEEKEEPING

The First of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

TO go back 70 years and view the scientific and physical world progress accomplished since then means probably more than any of us can realize at first thought. But it is only necessary to open any printed book, even a novel, dating back 70 years or more to appreciate the extraordinary physical change of conditions. Most of Dickens' stories, for instance, were written less than 80 years ago, but his characters traveled only in such conveyances as the post-chaise and the coach. Railroads came later. He knew nothing of telegrams, telephones, electric lights, bicycles, automobiles or aeroplanes. The sea traffic was so slow that it took from one to three months to carry the news of a battle from one hemisphere to the other. Kerosene oil was unknown, and house lights depended upon wax, lard oil or tallow dips. The postal systems were crude and clumsy until postal stamps were used, and this did not happen in England until 1840, and in this country until 1847, less than 70 years ago. In addition to the delay to get news from Europe, a letter crossing the ocean required 64 cents of postage. The International Postal Union was not created until 1874. The first successful transatlantic cable was not laid until 1866.

Seventy years ago we had no steam plows, no steam engines in fact, except very crude ones, no harvesting machines, no sewing machines, no type-writers. Steam-heated houses did not exist and bath tubs were luxuries found only in palaces or special houses. No automobiles ran on the then muddy roads of Europe. The inventors of flying machines were laughed to scorn in their unsuccessful attempts and threatened with the insane asylum for reward of their genius. One of the rare industries in which the conditions are still today very similar to those of 500 years ago is the shoeing of horses.

Is it any wonder then that beekeeping should follow the trend of all material progress? It is for a record of this progress and of the men who brought it about that this series of articles is now begun. We hope to entertain the reader while giving the student easy references to the work of the past.

It would be a mistake for us to imagine that books on beekeeping were rare before that time. Bastian, an Alsatian minister, in his book "Les Abeilles," published in 1868, gives a list of 664 publications, 24 of which were printed between the years 1568 and 1700. Of the others, 237 were published during the 18th Century, and the remainder during the first 65 years of the 19th Century. Four hundred and twenty-five of these publications were in German, 181 in French, 24 in English, 9 in Italian, 8 in Latin, and the balance in 6 or 7 other tongues. But even his list is not complete, for the writer of this owns several works which received no mention in it, being evidently unknown to Bastian. His largest lists are of German and French works, perhaps because he read and wrote those languages himself.

Dzierzon

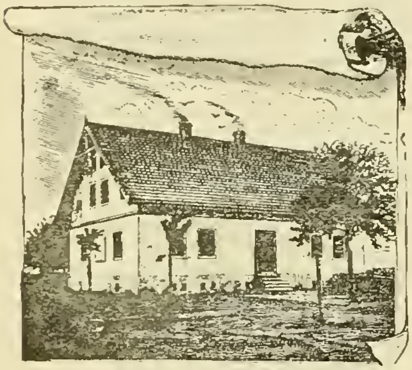
The first periodical on beekeeping of which we find any record was published in Landshut, Bavaria, from 1838 to 1843, then discontinued. In 1845, the famous "Bienenzeitung" was founded in Nordlingen, Bavaria, and continued many years, though it is now out of existence, but replaced by many others.

In 1845, Dzierzon, a Polish Catholic priest, of Karlsmarkt, Silesia, discovered parthenogenesis in queenbees, the faculty which they possess, in common with some other insects, of laying eggs that will hatch into male bees or drones, even though they have not mated. This discovery was the first real step forward since the time of Huber, and it was not accepted readily. The publication of Dzierzon's views by Schmidt, then editor of the Bienenzeitung, almost threatened the existence of this journal. But Siebold, Leuckart and Leidy, all microscopists and scientific beekeepers, studied it and confirmed it. The discovery was made under great difficulties, for the hive used by Dzierzon was just a "bar-hive," that is, its combs were hung on a plain top-bar without end-bars, so that at each visit the combs had to be cut away from each end of the hive-body before they could be taken out. To add to the inconvenience, as the hives were always placed in tiers, whether in doors or out-of-doors, probably to save space, they were made to open on the side and each comb had to be drawn out with pincers. If the third or fourth comb was wanted, the first two or three had to be first detached and drawn out. Yet Dzierzon became so accustomed to the handling of these hives that he used no other, even after movable frames were invented. The bar-hive is a very ancient invention.

Berlepsch, a German, after having doubted or denied the possibility of parthenogenesis, became one of its warmest adherents, after thorough trial. These men began the importation of Italian bees into Germany, which gave them the "proof of the pudding" so to say, for with the rearing of bees of a different color they were enabled to make sure of many facts.

Parthenogenesis may not seem of much importance to a beginner, but it was this discovery which enabled beekeepers to ascertain that the sons of a queen are true descendants of her race and that her mating does not influence their descent. It also explained why queens who have had no proper occasion to mate become drone-layers. It led to the more intensive cultivation of bees.

The time was now ripe for the invention of a practical hive. Though Dzierzon could get along with his bar-hive, there were already better hives in existence. Huber's leaf-hive, opening like the pages of a book, and the frames of which formed the body of the hive at the top, bottom and ends, was the more practical of the two. But it left much to be desired. Propokovitch, a Russian, and Debeauvoys, a Frenchman, each invented a movable-frame hive, between 1841 and 1845, but neither of these hives was as practical as the bar-hive, because the frames originally were tight-fitting in the body or box which contained them, and the bees were sure to glue them fast at every point of contact which they could reach. They worked well only until the bees had been in them a few months. The Propokovitch had reversible frames, *i. e.*, they could be turned bottom side up, and this was deemed by him a great advantage. Reversible frames were re-invented some 30 years ago in this country and had a slight rush of popularity.



Dzierzon's home for 95 years in Upper Silesia (From Gravenhorst)

The Debeauvoys method and hive which were slowly improved seemed so enticing that his book had six editions, from 1846 to 1863, and a report was made concerning his discovery to the Royal Agricultural Society of Paris, in 1847. This was the first hive adopted by Chas. Dadant, and the writer remembers playing with discarded hives and frames of this system while a child, in their garden, in France.

Dzierzon himself wrote articles on beekeeping in different publications as early as 1844, but it was not until 1848 that he was emboldened to publish his first work on bees, "Theory and Practice of the New Bee Friend." A later edition, under the title of "Dzierzon's Rational Beekeeping," was translated by Charles Nash Abbott, of London, and is still a valuable book.

Beekeeping at that time was not immune from the troubles which hinder it at the present. The beemoth was dreaded more than now for apiarists did not know that a strong colony with a good queen is sufficient to prevent its depredations. Foulbrood, known for centuries, made terrible ravages, and to make it evident we need only to quote what Samuel Wagner wrote about Dzierzon's experience with that disease:

"In the year 1848, a fatal pestilence, known by the name of foulbrood, prevailed among his bees, and destroyed nearly all his colonies before it could be subdued; only about 10 having escaped the malady which attacked alike the old swarms and his artificial swarms. He estimates his entire loss that year at over 500 colonies. Nevertheless, he succeeded so well in multiplying, by artificial swarms, the few that had remained healthy, that in the fall of 1851, his stock consisted of nearly 400 colonies. He must, therefore, have multiplied them more than three-fold each year."

In our next article we will mention the invention of the practical hanging-frame hive and the progress begun about 1850.

Candy Feeding for Bees

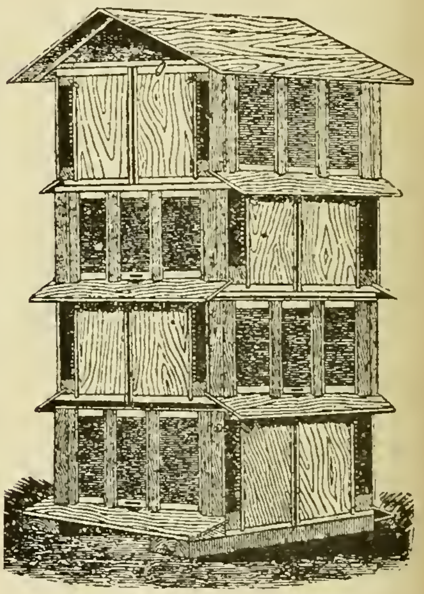
BY W. A. SHEPPARD.

A QUESTION that crops up here regularly every season is this: How late in the year can syrup be fed to the bees? In this section of British Columbia, when syrup feeding is necessary in the autumn, it is always advisable to get it finished by the end of September, so that the bees can store it in the combs and seal it over before the nights get too cold. Sometimes the weather during October is favorable for syrup feeding, but this is not to be depended upon, and it is therefore not safe to leave it so late. If the food is not properly sealed over when the bees go into winter quarters, diarrhea often supervenes, and if the colony does not perish outright in the winter it will be greatly depleted of bees before spring arrives, and the vitality of the survivors will have become lowered. Spring dwindling may then follow, and if the colony does not actually succumb it is usually unable to build up in time for the honey flow and a season is lost.

If syrup feeding is put off till too late, for any reason, properly made candy is the very best, in fact, the only well made substitute. Bees will winter on candy alone, but much care is necessary to make it of the right consistency. If it is too hard the bees cannot take it, and if it is too soft it will run down between the combs to the bottom-board out of reach of the bees. In either case starvation may result. One of the most reliable recipes for making candy is known as Brother Colomban's Formula, and is as follows:

"Into an enamelled pan, or preserving pan, put ten pounds of cane sugar (white crystals) and two quarts of hot water. Place over a clear, bright fire, and stir until the sugar is dissolved. When it begins to boil, draw the pan aside for a moment, and while it continues to boil slowly, remove the scum from the surface. This done, return the pan to the fire and *let it boil as fast as possible*, without stirring, for about 20 minutes. Test with a sugar boiling thermometer and boil until the temperature reaches 235 degrees, when the sugar will be sufficiently boiled; then stir in one teaspoonful of cream of tartar, boil for one or two minutes and remove from fire to cool. When the sugar has so cooled down that the finger may be kept in it for half a minute without scalding, then begin to stir, and continue to do so until the candy becomes white and stiff. The pan is now stood in another vessel, over the fire, containing hot water.

"In a short time the candy becomes more or less liquid, like cream, and an occasional stir must be given to dissolve all lumps. When properly dissolved and brought to almost boiling point (say 204 degrees Fahr.) pour it into molds or boxes and allow it to cool. To avoid over boiling, remove the pan from the fire while testing whether cooked enough. Also, to prevent mishap in another direction *i. e.*, boiling over, the pan used for making the candy should not be more than half full."



THE DZIERZON HIVES IN TIERS

The following is a shorter candy recipe that answers very well, if the directions are strictly carried out:

"To ten pounds of white crystal sugar add one and a half pints of hot water, a quarter of an ounce of salt, and a teaspoonful of cream of tartar. Put whole in a stew-pan over a brisk fire and keep stirred until the sugar is dissolved. When it comes to a boil, draw the pan back so that it simmers gently for ten minutes, and as the scum rises skim it off. Then place the stew-pan in a larger vessel containing cold water and keep stirring until it is of the consistency of thick cream and pour into boxes or molds."

When candy is properly made it should be just soft enough to be easily scraped with the finger-nail after getting cold. When it is ready to pour out of the boiler, if boxes have not been prepared ready for it, a very good plan is to line a deep pie-dish with brown paper and pour it into this. The paper will remain and prevent the candy from sticking to the coverings when on the hive. It is best to place it on the center of the frames over the ordinary feed-hole.

It may happen that in the fall the bees are only a few pounds short of the necessary amount of stores (25 to 30 pounds) to carry them through the winter, in which case a cake of candy may be put on the hive when packing them, to make up the deficiency without troubling to feed syrup at all. Candy may also be given to bees in the spring, and it is only suitable food until they begin to fly freely, when thin syrup may be substituted, if they are short of stores.

Candy is a very safe food early in the year, as it will not start robbing, as syrup sometimes does, which may result in the balling and loss of queens. Some beekeepers mix pea-flour or other pollen substitute with the candy used for spring feeding with good results, in districts where natural pollen is not sufficiently abundant. Several spoonfuls of pea-flour are stirred in just before the candy is ready to pour out into the molds.

Nelson, B. C.

Creating a Demand for Honey

BY T. P. ROBINSON.

THERE are advertisements galore for the sale of honey, but only two good ways of advertising practiced by the beekeepers at large. One, whose motive is to dispose of the honey as a commodity of commerce by any legitimate means, and the other is through education as to what honey really is, its great food value, its health-giving propensities, and its care and keeping. Sales made through the first medium are usually short lived while through the latter they are of lasting benefit.

There are many very intelligent people all around us who know nothing about honey. The average beekeeper has no means of finding out this great truth unless by chance he is thrown with a large number of people. Through the generosity of the Texas beekeepers and their State association I have been given a chance to study this problem first hand, as their superintendent at the State Fair at Dallas, Tex.

The benefits to be derived from such an exhibit are great. It is a known fact that the consumption of honey in the State of Texas is on the increase. When I first went to the fair to take charge of the exhibit many unexpected questions were brought up by the people at large, which greatly surprised me and which put me to a test to answer. The most unreasonable point raised was that adulterated honey was being bought in the open market. These complainants were numerous, many of them were prejudiced and determined, and insistent in their contention.

When these assertions were made I would ask them why they thought that it was adulterated, and they would usually answer in two ways: First, it was made out of sugar, they knew for the reason that it would quickly turn to sugar especially when it was placed in the refrigerator. Second, because the taste was nearly always different from what it used to be. To the first I would reply that the sugaring was a guarantee that their honey was pure since honey would do that when the temperature was lowered about it for any length of time. To the second I would explain that there were as many different flavors to honey as there were aromas to the different flowers, and the flavor of the honey partook of the nature of the flower from which it was gathered. To some I would offer a dollar for every pound of adulterated honey found in the market, but to secure the money I would require them to have witnesses to prove that the honey was just as received from the grocer. I would do this just as pleasantly and unconcerned as I possibly could, allowing the party to do his own thinking and form his own conclusions, and to finish it all off, I insisted that I really wanted him to bring the honey, for there was no one who wanted the adulteration stopped more than the beekeepers in the State of Texas, and I would consider it a personal favor for him to assist me in the clean up. There never was an offer of adulterated honey. From about two dozen per day six years ago, the criticisms have dwindled to less than a half dozen the present year.

I was really surprised that the public was so ignorant of honey. The sugaring idea and the different "taste" idea, as they termed it, were the great objections to honey, especially the former. These people were highly educated. Many of them were university graduates, public school teachers, and many more high school graduates. Realizing this I had leaflets printed, setting forth the flavors of honey, how to tell its purity, how to liquefy it when granulated, where to keep it, and fully explained its flavors and colors. I distributed these leaflets to any and all who thought they would be benefited. The increase in consumption, to my mind, has greatly grown as a result of this campaign. Articles in the daily papers and farm papers that the general public read helped.

There is yet very much work to do along this line, and it behooves every beekeeper to take up this campaign of education to enlarge the sales of honey. Advertising by education is the right way to stimulate the use of honey, and it has the advantage of influencing the prospective customer to become a user of honey regularly rather than impress him for the time being that you have something to sell.

Bartlett, Tex.

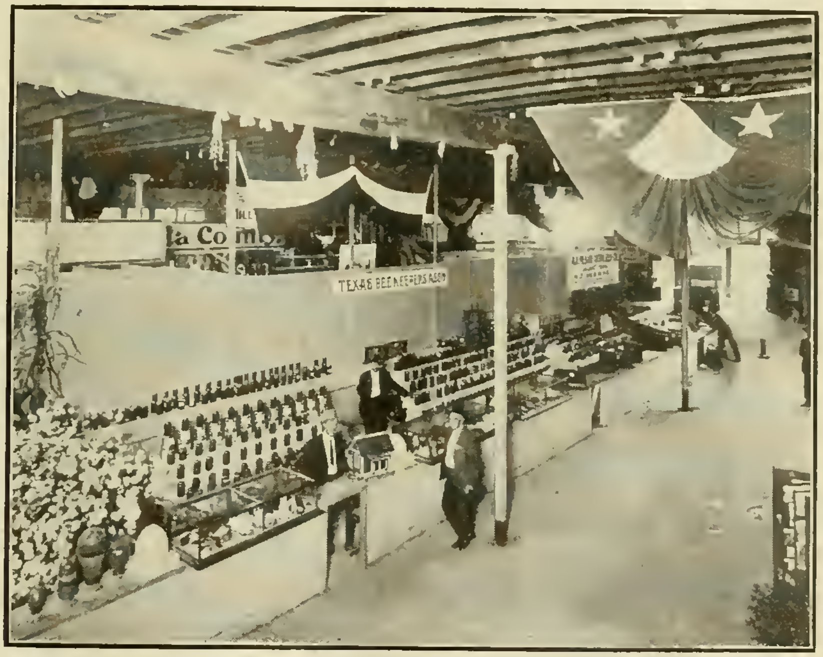


EXHIBIT OF THE TEXAS BEEKEEPERS AT THEIR STATE FAIR

A Remedy for Ants

BY C. E. FOWLER.

I WAS camping out and was very much bothered with medium sized ants in and around the camp. I had a tub about 15x20 inches and 6 inches deep, flaring sides. I dug a hole and put the tub in the ground, the top even with the ground. I put an inch of water in the bottom. The first day the water was covered with drowned ants. In three or four days, ants were very scarce, and in a week or two no more were to be seen.

I think the ants were thirsty and went down the slanting sides for water, and either could not get out of the water or else could not climb the tin sides. A pan, or several of them placed around the apiary, should serve the purpose without endangering the lives of any other animals. But it would probably be better not to let the bees drink the water with dead ants in it. A ¼ inch netting, or even a board covering the pan raised ½ inch would keep the bees out altogether.

Hammonton, N. J.

AMERICAN
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA
BEE JOURNAL

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C. P. Dadant, Editor.
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Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Comb-Honey Rates in the South

In the Southern Classification, comprising practically all the region south of the Ohio and east of the Mississippi rivers, there are no rates on comb honey in carlots, while less than carload shipments go at double first class.

Letters addressed to W. R. Rowe, of the Classification Committee at Atlanta, Ga., urging changes in the classification so as to have it conform with others, would have their effect in helping get the change.

The Honey Market

What a contrast this year from the same date in 1916! Extracted honey was offered at this time last year at ridiculously low prices both on the coast and in the local markets. This year extracted honey is at a premium whether it be light or amber. Last season amber honey was offered on the coast in carlots as low as 3½ cents to 4 cents a pound, while this year not a car can be had at present for less than 7 cents to 7½ cents per pound.

Now what are the contributing causes? In our opinion, one of the leading causes is the fact that California has a very short crop, and that the intermountain States, where extracted honey is produced, were also very short of honey this season. For instance, last year we were offered two carloads of white alfalfa honey by beekeepers in Idaho, and at a very low price. This year, these same beekeepers wrote us asking at what price we would furnish them a carload of white clover honey to supply their trade. The result of all this has been that extracted honey is now at a premium. One of the largest bottlers recently made a statement that he would pay an extra fancy price for a carload of white honey, no matter where it was secured. In fact, he felt sure that a carload could not be had anywhere.

The shortage of fruit is perhaps one of the greatest causes for the consumption of honey, and in our locality, as late as February, first class apples sold as low as 50 cents per bushel. This year there were no apples of any kind stored, and those which are shipped in are priced now at $1.50 to $2.00 per bushel.

The fact that there has been a tremendous amount of honey exported to the countries now at war is also a reason of the shortage of the honey supply and the high prices. Besides this, the advertising campaign made for Airline honey has brought the attention of consumers to the fact that honey is a food and not a luxury.

Although the middle West had perhaps the largest crop in its history, the fact that it was produced in a section which is very thickly populated, prevented the markets being flooded. Instead of white clover honey being shipped to distant markets, it was for the greater part consumed right where it was produced. In our own city there were a number of beekeepers who produced large crops, but these are now entirely sold out and grocers are demanding more honey from other sources. Although the middle West had the largest crop in its history, it was soon absorbed by the local market.

Our own crop of 125,000 pounds, two thirds of which was white clover, is very nearly all cleaned up, besides a larger quantity which we have had to buy to protect our customers, and we have sold it all at good prices. Beekeepers who sold at a low price earlier in the season are hardly to blame for letting go, however, as they had 1915 to look back to.

There is no doubt that this year's experience will cause a higher price for extracted honey in 1917. Even though there should be large crops throughout the country, the fact that the markets are cleaned up is bound to make higher prices for next year.

Regarding comb honey, the case is entirely different. There seems to be more comb honey on hand than the markets can well take care of. It must be remembered, however, that with the scarcity of extracted honey, the demand for comb honey is bound to increase, and we hope that before the new crop the comb-honey market will be almost as clean as the extracted-honey market.

A New Bee Paper

"The Beekeepers' Item" is the name of the new bee paper designed especially for developing the interest of beekeepers in the southwest. It is an 8-page monthly, and has a subscription rate of 50 cents a year.

The editor is Mr. Louis H. Scholl, one of Texas' largest beekeepers, and well known as a contributor to bee publications. He will be remembered as the champion and advocate of the divisible brood-chamber hives which he uses exclusively. He is also president of the newly-formed Texas Honey-Producers' Association.

There is a fertile field for such a paper in Texas and adjoining States, serving the purposes for which Mr. Scholl intends it. It will be devoted to disseminating news items and encouraging neighborliness and cooperation among the beekeepers of that great section, and will have as well an educational value. No doubt also that it will have no little influence in promoting legislation.

We wish the new paper and its able editor success. He should have the hearty support of all southwestern beekeepers.

The National Meeting

As announced in these columns, the National Beekeepers' Association will meet this year at Madison, Wis., on Feb. 6, 7 and 8. Any one who has attended the numerous State conventions during the past two weeks, probably will have met the president, Prof. Francis Jager, of Minnesota, and will have become as enthusiastic as he in regard to the coming National gathering.

The National seems to be coming into its own again, and with such men as Prof. Jager, F. E. Millen, N. E. France and others who are now working hard to make it stronger than ever, there is no doubt that it will become of inestimable value to the beekeepers. The work planned by Prof. Jager and his colleagues for the National during the coming year is quite extensive in its scope. Each topic will be discussed in turn at the convention.

The gathering together of data regarding the quantity of honey produced in the United States is in a large measure covered by the Bureau of Crop Statistics, but this bureau has nothing whatever to do with the prices secured by producers. It is the intention of the National to get definite information for the beekeepers regarding the quantity of honey they have on hand, size of packages, etc., and by offering it collectively to buyers, secure better prices than have usually been paid to the beekeepers individually.

Prof. Jager and Sec. Millen are acquainted with nearly all leading beekeepers throughout the country, and judging by what has been done in Minnesota and Michigan, we feel sure the National meeting will be one of the largest and best ever held. We urge, therefore, that every one who can possibly attend the convention do so and help make this meeting what a National Beekeepers' Convention should be.

Honorary Members of the Michigan Association

The Editor has been elected Honorary Life Member of the Michigan State Association, in company with Dr. C. C. Miller and Mr. A. I. Root. He feels very proud of the distinction and still more of the company in which he finds himself, with two of the oldest and most renowned beekeepers of America, who are his seniors in both years and experience.

What About that Home Market?

"I have sold all of my honey locally and could sell as much more if I had it." It is not an unusual thing to get letters with the above quoted phrase in them, even this early in the honey selling year. Unfortunately the majority of these beekeepers make no effort to supply that demand. It is these whom we wish to urge.

You should by all means make every effort to keep your customers supplied with honey at any time they want it. If you do not, what happens? Most assuredly the desire for sweets will be satisfied and they substitute, instead of the wholesome honey, the poorer articles on the general market throughout the year. The following year, they may have found a substitute which they think is as good as honey, and you lose a customer.

Nowadays it is not hard to find advertised a grade of honey which will rank in flavor with that of your own production, and you should be able to get it so as to make sales at the prices you have been getting for your own. If not, there is something the matter. Very possibly you have been getting too little for the honey which you sold yourself. Then, too, every pound of some one else's honey you dispose of will help relieve the tendency of over supply and help bring up the price.

Far and away the greatest reason why honey is not sold more readily today is because the majority of beekeepers, small and large combined, do not over-produce, but under-supply their customers.

Isle of Wight Disease

We acknowledge with thanks the receipt from Mr. John Anderson, M. A.; B. Sc., of the North of Scotland College of Agriculture, of two bulletins on the Isle of Wight disease in connection with *Nosema apis*.

The observations and experiments recorded were conducted mainly in Lewis, Outer Hebrides. This island, east of North Scotland, is at about the latitude of Juneau, Alaska, or above the 58th degree.

The conclusions reached in these bulletins do not agree with those of some other investigators, for the writers do not charge the *Nosema apis* as being the cause of Isle of Wight disease. It is only sufficient to quote the statement made on page 51 of the "Observations and Experiments":

> "Our main conclusion regarding *Nosema apis* is that so far we have been unable to recognize any casual relation between the presence of this parasite and the disease. We have found it to be present over prolonged periods in healthy stocks, while we were unable to find it in other stocks in the apiary, nor did Isle of Wight disease spread under these conditions although various races of bees were present. Deliberate infection of a stock with *Nosema* did not produce the disease. It is well established also that the disease occurs where the parasite cannot be found. We have numerous instances of this on Deeside."

This much debated question will sooner or later be settled by further evidence. Errors occur in observation as well as in diagnosis. But very few scientists are unwilling to give up to evidence, when it becomes flagrant. Time will clear the now obscure question. Isle of Wight disease, as well as our mysterious "bee paralysis" and "May disease," will soon be classified and controlled.

Weight of Bees

The Beekeepers' Review, in its October number, page 370, contains an interesting article by O. L. Hershiser, in which he gives the weights of worker-bees and drones. He figures 5088 workers or 2528 drones to a pound. B. F. Koons, in the "A B C of Bee Culture," gives about 5000 workers or 2000 drones as weighing a pound. An old and very accurate writer on bees, L'Abbé Collin, in 1865, gave the number of drones as they leave the hive for a flight at 1925 to a pound, while the number of drones coming home from a flight was 2070. Inversely, the workers are heavier when they come home than when they fly out.

From all this it appears that drones are at least twice as heavy as worker-bees. They certainly cost fully twice as much to rear. Hence, the advisability of limiting their numbers, except in select colonies that are desirable for breeders.

Changes Proposed in Iowa Law

In his annual report which has recently been filed in the governor's office, Frank C. Pellett, the Iowa inspector of bees, proposes that the law be so changed that the office be placed in the extension department of the Agricultural College. In this way the appointment will be taken out of politics, and it will be possible to change inspectors at any time instead of waiting for a term to expire in case conditions are unsatisfactory.

As proposed, the law will be drawn to permit inspection as at present upon call of the beekeepers, but will provide for enforcement of the provision requiring proper attention to diseased colonies, by another officer rather than by the inspector. Apiary demonstrations similar to those now conducted in Ontario will also be provided for. It is proposed to require all the inspector's time for work in bee diseases, development of markets, etc. There are several advantages which will accrue if the change is made. The beekeepers in attendance at the Iowa convention approved the proposed change without dissent.

The inspector suggested that the present law places too much power in the hands of one man, and that while the inspector's orders should be carried out, it should be possible for the owner of the bees to have some kind of an appeal to prevent unjust injury in case of a mistake in diagnosis or of prejudice on the part of an officer.

This is the fifth year that Mr. Pellett has served in the capacity of State bee inspector of Iowa, and he proposes to retire from the work to devote his entire time to his bees and to his work for the American Bee Journal and other magazines.

Field Book of American Wild Flowers

This office is in receipt from the publishers, of a 600-page book entitled, "Field Book of American Wild Flowers," by F. Schuyler Matthews, a book which would be an addition to any beekeeper's library, since it contains a very full description of the flowers of this country besides having 24 colored plates and over 300 other engravings of flowers. The book is of a size that fits readily into the coat-pocket which makes it a ready reference on any desired excursion.

The flowers are arranged in the book by families, with full scientific names given, while the index, a very full one, gives not only the scientific but the common names as well. It would be hard to find a book so compact in form, yet giving so much valuable information on our native wild flowers.

The price of the "Field Book of American Wild Flowers" is $2.00, and the publishers are Messrs. G. P. Putnam's Sons, New York City. The book wrapped for mailing weighs two pounds.

Y. M. C. A. Course in Beekeeping

The Y. M. C. A. of Louisville, Ky., is perhaps the only association of this kind to give a course in beekeeping. In our August, 1915, number, page 263, we gave a short mention of this course and a photograph of the class.

The editor has lately spent a week in Louisville, and was given an opportunity to become acquainted with the men in charge, W. H. Lippold, director, and J. O. Dunkin instructor in bee-culture. The course occupies about ten days and covers the most necessary information, equipment, handling bees, natural history of the bee, swarming, robbing, diseases, honey production, feeding and wintering.

The example set by this well-managed association is worthy of imitation. Many a small wage earner around cities can add to his income if he learns how to produce honey efficiently and profitably. We will follow the progress of this Louisville Course and will again mention it at some future day.

Vaseline for Burr-Combs

G. S. Oettle, writing in the South African Poultry Magazine, advises the use of vaseline on top bars of frames to prevent the building of burr-combs. He also states that "all exposed parts of supers, etc., should be vaselined on the bottom edge. Will some of our subscribers try this and report results?"

Asters?

Rev. M. W. Millard sends a specimen of a purplish-blue flower upon which his bees work as if they were crazy. A few sprigs that he brought a few years ago from East Tennessee, where it grows in yards and gardens, have spread into a clump six feet in diameter. The bees appear to get no pollen from it, only nectar, and work on it from its first appearance in September, until after hard freezing. He thinks it can hardly be an aster, is spite of appearance, since it multiplies only by the spreading of the roots, and matures no seed.

It is possible he may be mistaken as to its being anything but an aster. The flower certainly looks like an aster. Plants behave differently in different localities, and it is rather remarkable that in the northern tier of counties in Illinois, while asters grow abundantly they are of little or no value to the bees, while in some places, as in the present case, they yield abundantly. It seems a little puzzling, however, that they should not mature seed where they yield so much nectar. C. C. M.

Swedish and Dutch Bee Papers

For some months we have been receiving, in exchange for our own Journal, copies of bee papers from both Sweden and Holland. We would be glad to get in touch with subscribers acquainted with either the Swedish or Dutch language with a view of having such important articles as appear in those papers translated for the American Bee Journal.

AMONG EASTERN BEEKEEPERS

The Third of a Series of Articles by C. P. Dadant on His Trip Through a Portion of the East

THE day following the Boylston meeting was Sunday, Aug. 6, and Dr. Gates and I spent it in Boston, seeing sights, and especially the historical sights. Bunker Hill and Charleston Heights disappointed me. Faneuil Hall is just what its pictures represent, a very old building in the center of the market quarters. But the Paul Revere ride, Concord and Lexington battle fields are just what one might expect, very interesting. Boston has a few sky scrapers. I wish they could keep them out. The city was full of tourists and the roads were lined with sightseers.

Back to Worcester, we started from there for Amherst, on Monday, Aug. 7. We had two days before the next field meet at Springfield. This was my opportunity to visit the College of Agriculture.

Amherst is on the slope of a valley overlooking the Connecticut river. Like all New England towns it has beautiful shade trees. Two colleges, Amherst and the Agricultural State University, give this small borough a distinctly refined air. Of course, the greater part of my time was spent in Dr. Gates's office and in the apiary. His bee library is the richest I have ever seen, numbering over 900 volumes, exclusive of the magazines on bees. The oldest work in the collection is an Italian work, published in Castel Sant-Angelo in 1539, entitled, "Le Api di M. Giovanni Rucellai." He has also two copies of quaint old Butler's work published in England in 1623 and 1634.

In the implement museum, composed mainly of modern devices, I saw Mr. Langstroth's original observing hive and a queen-mating nucleus, also from him, both old and weather-beaten.

In the wax-rendering room, located in the basement of the Entomological building, I saw some very ugly-looking slum-gum, from which all the wax had been extracted which could be secured by present methods, and which I was told contained still, according to analysis, a large portion of its weight in beeswax. I do not see how more wax could have been secured from it.

The college apiary and building are in a fine spot, under the supervision of Mr. J. L. Byard. I will speak of it again later, for I had occasion to come back to Amherst.

I also wish to mention my visit with Dr. and Mrs. Paige, who took me around one evening along the numerous tobacco and onion fields of the vicinity, for these two crops are staples, tilled by foreigners, mainly Poles. Dr. Paige is State Veterinarian, and his museum of veterinary science is valuable. I there learned that cows sometimes foolishly eat old white lead paint, or paint brushes, or painted rags which may have been carelessly thrown away. This often kills them. A rag full of paint, the size of a man's fist, taken out of the stomach of a cow, was on exhibit. So, friends, don't leave any old paint where cows may reach it.

On Wednesday the 9th, Dr. Gates and I went to Springfield and traveled through the Holyoke hills, following the Connecticut river which passes between Mount Tom and Mount Holyoke. The woods are delightful, being part deciduous trees and part evergreens. But I was sorry to learn that the chestnut trees are fast disappearing, killed by some kind of blight. Entire groves of them were dead or dying. The weather was pleasant, but truth compels me to say that there are just as sudden changes of temperature in New England as in the middle West. At times my light summer clothes proved insufficient and a sweater was welcome.

At Springfield, the meeting was held in the yard of Mrs. A. A. Packard, a very pleasant lady beekeeper. The president, Mr. O. M. Smith, spoke of this association being composed mainly of small producers and amateurs, many of them horticulturists. It is in that section of country that many bees are reared for the use of florists and gardeners, especially for the hot-house cucumber growing. Another lady beekeeper, Mrs. A. H. McCarter, had a very interesting essay on "Helping the Beekeeper."

Among things exhibited at this meeting, Mr. X. A. Reed displayed candy in paper plates. The candy is poured into them while hot. It is a very good method for easy handling.

As the next meeting was to be, the following day, at Dalton, near Pittsfield, Mass., Dr. Gates and I started as early in the evening as we could, to travel the distance, about 70 miles. We passed through "Jacob's Ladder" in the winding roads of the Berkshire hills, gentle slopes up immense timber-covered hills and down again on the other side. We passed through Lenox, a small village surrounded with the summer homes of numerous millionaires, all fine estates. We arrived at Pittsfield quite late, about 9 p.m.

The next morning, it was but a short run to Dalton, to the Berkshire County Field Meet on the estate of ex-Senator W. M. Crane. The renowned Crane linen bond paper is made here and we spent a half hour or so visiting the factory.

The bee-meeting had been arranged by Mr. H. C. Schmeiske, head gardner and beekeeper for the Crane estate. Mrs. Crane was present with a few friends during a part of the meeting and very graciously tendered to us the freedom of the grounds.

Although President Musgrove and Mr. Ralph Ely gave very entertaining talks, the success of this meeting was due especially to the energy of Mr. Schmeiske, who, though small in stature, has a very large heart and wonderful energy.

At the apiaries of Flintstone farm belonging to F. G. Crane and Harry Hume, I saw very white comb honey in sections and learned that much of it is produced from wild thyme, which blooms from Aug. 1 until frost. Dr. Gates assured me that the honey of the Berkshire hills compares favorably with that of any other spot in the United States.

I must hurry on. Still I will linger long enough to speak of a statement of Latham, which I have not yet mentioned and which we discussed to some extent at this meeting. Latham asserts that, in combat between a laying queen and a virgin, the virgin is *always* the winner, because of her greater agility. Dr. Gates says this is not always so and that he knows of instances where the fertile queen won. How is this?

At 5:00 p.m. we left for Albany, 36 miles away, for we had another meeting to attend the following day, Aug. 11, at Altamont. The weather was exceedingly cool, and the north wind blew a strong breeze among those Berkshire hills. It was lucky for me that I had a light sweater to wear. We found the main road closed at different spots, owing to repairs, and the detours caused us to travel 55 miles instead of the 36. We were caught in a hard shower. But a good top to the auto and the water-proof roads on which we traveled made the shower insignificant.

We reached the Hudson river at Rensselaer, and crossed to Albany at 7:30, at dusk.

Altamont. The meeting of the Eastern New York Beekeepers at the apiary of W. D. Wright, president of that Association, had an attendance of some 50 beekeepers. It was called to order by Mr. Davenport, its industrious secretary. Here is the center of the large honey production of the East, for they have white and alsike clover, sweet clover, many wild blossoms and immense fields of buckwheat for fall pasture. Only 10 miles away was the home of the famous Alexander, who kept as many as 700 colonies in a single apiary. His son still continues the business and attended the meeting. I also met N. D. West, of queen-cell protector fame, a very expert beekeeper, and inspector Chas. Stewart, another well-known inspector, and dozens of other large producers. There were 16 to 18 ladies present, a fair number, although this record was to be beaten at the Adirondack meeting, where half of the attendance were ladies.

The bees were working very strongly, at the Wright apiary. Mr. Wright has a very simple way to increase the entrance and ventilating opportunities of the strong colonies. He simply draws the hive forward on its bottom-board until it projects beyond it four or five inches, more or less, according to requirements.

Mr. West stated having had a surplus of 1300 pounds of dandelion honey, one year, and that it granulated very readily. Mr. Stewart spoke of fruit

THE CRANE ESTATE. MRS. CRANE TENDERED TO THE BEEKEEPERS THE FREEDOM OF THE GROUNDS

THE CRANE ESTATE WHERE THE BERKSHIRE BEEKEEPERS' MEETING WAS HELD bloom honey also being prompt to granulate. Neither of these products is ever harvested in sufficient quantity in Illinois to make a test.

The question of the cost of comb to the bees was raised and the opinions expressed varied between 10 and 20 pounds of honey for each pound of comb. This is far from the French writer Sylviac, who claimed that the cost rarely exceeds two pounds of honey, in favorable circumstances. But those men are experienced and I believe their opinion is based on plausible grounds.

It will interest our readers to learn that Mr. Wright is one of the pioneers of American beekeeping. In 1871, when only 20 years of age, he described in the American Bee Journal (November, 1871, page 110), a home-made honey extractor, the tank of which was made of wood coated with beeswax. The honey extractor was then a novelty and was not yet manufactured for sale. Mr. Wright was also for several years one of the officers of the National Association.

FLINTSTONE FARM, DALTON, MASS., ESTATE OF F. G. CRANE
Apiary of Ralph A. Ely

The Importance of Bees in Horticulture

BY L. H. PAMMEL.

THE importance of bees in connection with the production of fruit has long been recognized. Without bees we would have very little fruit, very little alfalfa or clover seed.

Dr. Joseph Gotlieb Kolreuter, a German naturalist who studied the hydridization of plants from 1761 to 1766, made some observations on the pollination of plants. In one of his treaties he says, "Experience has taught me that this, which has long been asserted concerning the fig tree, is true of many other plants, some of them very common. In all cucumber plants, in all sword lilies, and in not a few plants of the meadow family, pollination of the female flowers and stigmas is effected by insects. I was amazed when I made this discovery in one of these plants for the first time and saw that nature had left so important a matter as reproduction to a mere chance, to a fortunate accident. My amazement was gradually converted, however, by prolonged observation, to admiration of the means, at first sight casual, but in fact most rare which the wise Creator employs to secure reproduction."

A second German, Konard Sprengel, made a large number of observations on flowers. He says in his preface, "In the summer of 1787, while I carefully watched the flower of the wild geranium (*Geranium sylvaticum*), I found that the bases of its petals were provided on the inner side and on both edges with fine soft hairs. Convinced that the wise Creator of Nature has brought forth not even a single hair without some particular design, I considered what purpose these hairs might serve." Then he discusses how these hairs prevent the nectar from being worked out by the rain. He made many observations on the plants of Germany, 500 species in all. He made this remarkable statement: "It seems that Nature is unwilling that any flower

HOME APIARY OF W. D. WRIGHT, AT ALTAMONT, N. Y.

should be fertilized by its own pollen." Thomas Andrew Knight, in 1799, made this statement: "No plant fertilizes itself, through many generations." This conclusion was drawn from his experiments. Darwin's first work in connection with the Leguminosæ (1858) indicated that seeds were not produced as abundantly where the insects were excluded from flowers by means of a net, and in his work on the "Fertilization of Orchids," he says: "Nature tells us in the most emphatic manner that she abhors perpetual self-fertilization;" a statement too strong because there are many plants which continuously fertilize themselves.

Let us take a few illustrations to show how important bees are to plants in the production of seed.

We may use the red clover as an illustration. Darwin estimated that 100 heads of red clover bear about 2720 seeds. He covered 100 heads to keep bees out and found that no seeds were produced. He asserted that the clover could not fertilize itself. Some experiments made at Ames under my direction by Mr. H. S. Coe, show this conclusively. Mr. Coe took pollen, placed it on the stigma of the same flower, and in no case did seed set.

In another experiment the pollen was taken from another flower of the same plant and placed on the stigma, with the result that no seed was formed. When, however, the pollen is brought from another plant and placed on the stigma, seed is produced. For four seasons experiments were made at Ames with the honeybee as follows:

We placed a swarm in a cage containing red clover. The cage was made of wire netting, large enough to exclude all other bees and large insects, permitting the honeybee to go out and in. Later the seed was harvested. The results are interesting as showing the importance of the honeybee in the production of clover seed.

PRECIPITATION.

Year	June	July	Aug.	Seeds per head
1911........	2.05	.61	3.28	37.2
1915..	2.58	7.13	3.37	18.79

THE EDITOR ADDRESSING THE EASTERN NEW YORK BEEKEEPERS AT THE APIARY OF W. D. WRIGHT

A check cage of smaller size and near the bee-cage, but without bees, produced almost no seed. A few seeds were found in some of the clover heads, but we thought the seed in these heads might have been caused by some small creeping insect conveying the pollen from another plant.

Fields of red clover to which honeybees, bumblebees and other insects had access had an abundance of seed.

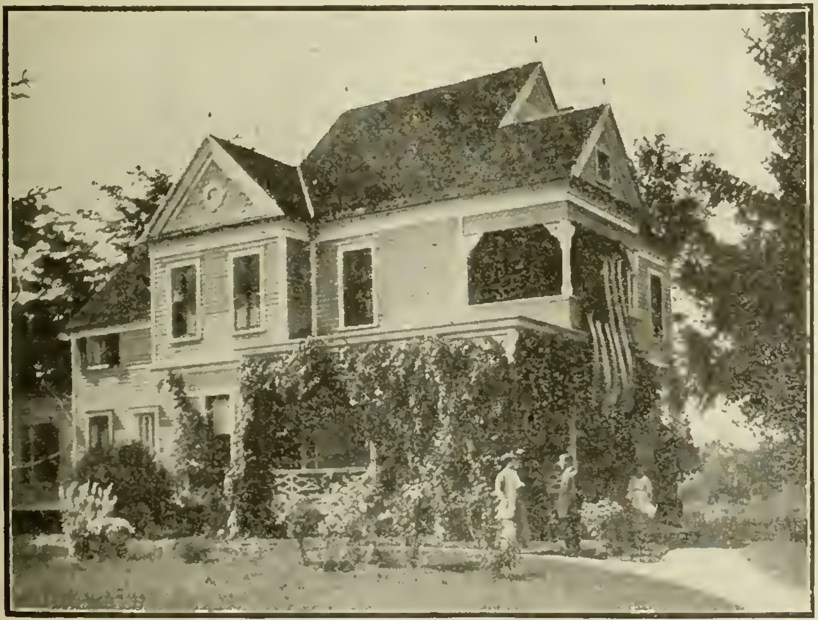
These experiments, it seems to me, should convince the skeptic that bees are important in the pollination of the red clover.

The strawberry is another plant where insects are necessary to produce good fruit. In some varieties, the staminate and pistillate flowers are borne on different plants. I think it was Prof. Waugh who conducted an experiment to determine whether the wind could carry the pollen. He exposed gelatin plates which should contain the pollen grains if carried by the wind. In not a single case did he find the pollen grains of the strawberry. The regular pollinators of the strawberry are honeybees and other small bees.

The pollination of the grape is brought about by bees, the wild grape of Iowa woods is diœcious. Many of the cultivated grapes are sterile when pollinated with their own pollen. Prof. Beach, who conducted some extensive experiments says: "Such kinds, when they are self-pollinated only, bear no fruit or produce more or less imperfectly filled clusters." "An examination of the results which are summarized in Table III shows that Amina gave scarcely any fruit when fertilized with the imperfectly self-fertile sorts, Brighton and Wyoming, but fruited freely when fertilized with the self-fertile sorts, Niagara, Worden and Catawba. Barry gave no fruit when pollinated with either Black Eagle or Hercules, but mixed vineyards were well filled with fruit." "In previous experiments varieties of grapes which are self-sterile or nearly so have shown about as little ability to fertilize other self-sterile sorts as they have for fertilizing themselves. In the tests here reported they have usually likewise failed to fertilize self-fertile varieties. Indications are seen, however, that the pollen in some instances is not altogether important, but that its own pistils are less congenial than those of some other varieties. Further investigation is needed to learn whether the self-fertility arises because the pollen is deficient in amount, or is not well developed, or is uncongenial to its own variety."

Every gardener knows that bees are important in pollinating the cucumber. It is a common practice to have bees in the cucumber house. Very few cucumbers would set without bees.

The tomato is sometimes self-pollinated, but bees are certainly an important factor in producing good fruit.



RESIDENCE OF W. D. WRIGHT, OF ALTAMONT, N. Y.

The results of Prof. Fink and others indicate this beyond a doubt, but in one of the experiments reported the first tomato produced by close fertilization contained 48 seeds, the average number of seeds for the variety being more than 200; the fruits were below the average in size. Other observations recorded by this writer indicate that the size of the fruit is slightly increased and that the crossed fruits have a greater tendency to be irregular than those not crossed.

The various species of plums are also pollinated by insects and the bee is important. When insects are excluded fruit will not set. Prof. Waugh found that out of 153 blossoms, covered, of the Arkansas Lombard, no fruit set; that out of 457 blossoms, covered, of the wild goose (*Prunus Americana*), no fruit set; and that out of 90 blossoms, covered, of the Japanese plum (*Maru*), no fruit set. It has long been recognized that bees are important in the pollination of the apple and pear. Experiments made by Waite show the Baldwin apples produce better fruit when cross-fertilized. Waugh obtained interesting results in some experiments conducted in Vermont, only three apples having set out of 2586 blossoms covered, or little more than one-tenth of one percent. Of these the Baldwin, Esopus, Fameuse set some fruit. These varieties are generally considered more or less self-fertile.

We may conclude that bees are essential for the production of a fruit-and-seed crop of some agricultural plants. Every horticulturist should keep a few colonies of bees to insure a crop of fruit.

Ames, Iowa.

Are Beekeepers Immune to Zymotic Diseases?

BY W. J. SHEPPARD.

THE above is the subject of a leading article in a recent issue of the British Bee Journal, to which attention had been previously drawn by a correspondent. It is stated that the question is considered of such far reaching importance that the Royal Faculty of Medicine have asked for enquiries to be made respecting it. The editor will therefore be glad to hear from any person in a position to throw any light on the matter.

The theory is that people who keep bees and have become immune to sting poison, which is one of the strongest antiseptics known, consisting of formic acid with slight traces of malic and other acids, become also immune from cancer, consumption, neuritis, or any form of zymotic disease. The inference is that the sting poison acts as a protection against noxious germs by purifying the blood, and has given rise to the suggestion that zymotic diseases can be prevented or warded off by injections of a similar nature, if it can be satisfactorily proven that beekeepers as a whole, who have become immune to the poison, are free from these diseases. Of course, it does not apply to beekeepers who habitually protect themselves against stings and only get stung occasionally, but to those on whom the poison has absolutely no effect by reason of their having been stung so frequently that they have become immune.

The theory is supported by the statement that French doctors advise their consumptives to keep bees. If there is anything in the theory a good many claim that the remedy is worse than the disease. This is not so, however, and it is astonishing how soon one can become so accustomed to being stung that very little notice is taken of it. Having reached this stage there is absolutely no swelling or inconvenience from the after effects.

If after a sting is received it is rubbed out quickly with the finger nail before the poison bag has time to pulsate and pump much of the virus into the wound very little pain will be experienced, and the homeopathic doses thus received will in course of time cause entire immunity, with a minimum of suffering.

Nelson, B. C.

No. 24.—The Honey-Producing Plants

BY FRANK C. PELLETT.

Photographs with this number by J. M. Buchanan Franklin, Tenn.

IN this issue we come again to the South. The two trees described herewith are little known except in the southeastern States.

YELLOW WOOD.

The yellow wood, *Cladrastis lutea* (same as *Virgilia lutea*), is a tree confined to a limited range. It is found principally in Kentucky, Tennessee and North Carolina. While it may be found to some extent in the States adjoining the three mentioned, it is rare except in very limited areas. It is recorded as occurring on shaded bluffs in the Tennessee valley in Alabama, and may be looked for in similar situations in Mississippi, Georgia or South Carolina. The flowers are white as can be seen

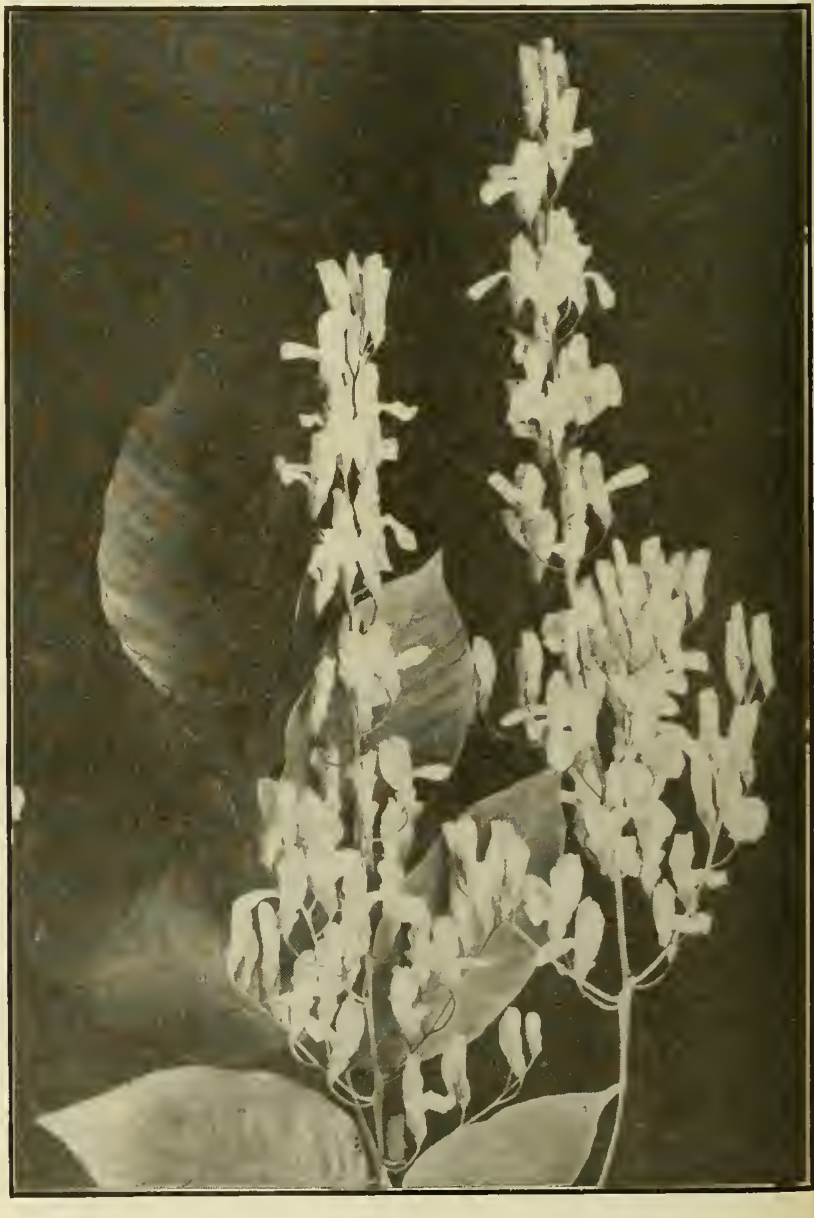


FIG. 96.—BLOSSOMS OF THE YELLOW WOOD

from Fig. 96, and appear in April and May. The panicles are sometimes a foot long. According to the notes furnished by Mr. Buchanan the honey has a strong, distinctive flavor and is light amber in color.

The wood is heavy and hard and yields a yellow dye. It is known also as Kentucky yellow wood and gopher wood.

TULIP TREE OR YELLOW POPLAR.

The tulip tree, *Liriodendron tulipifera*, also known as yellow poplar, is a very large tree often growing to a height of from 100 to 140 feet and a diameter of six to nine feet. It is found from southern New England west to southern Michigan and south to the Gulf States, east of the Mississippi. It is also found to a limited extent in southeastern Missouri and eastern Arkansas. It blooms in April and May and produces a light amber honey of good flavor.

According to Buchanan the honey yield from this source is heavy and the tree is an important addition to the nectar-secreting flora of Tennessee and nearby States. The showy flowers are shown at Fig. 97.

Atlantic, Iowa.

Copyright: 1917, by Frank C. Pellett.

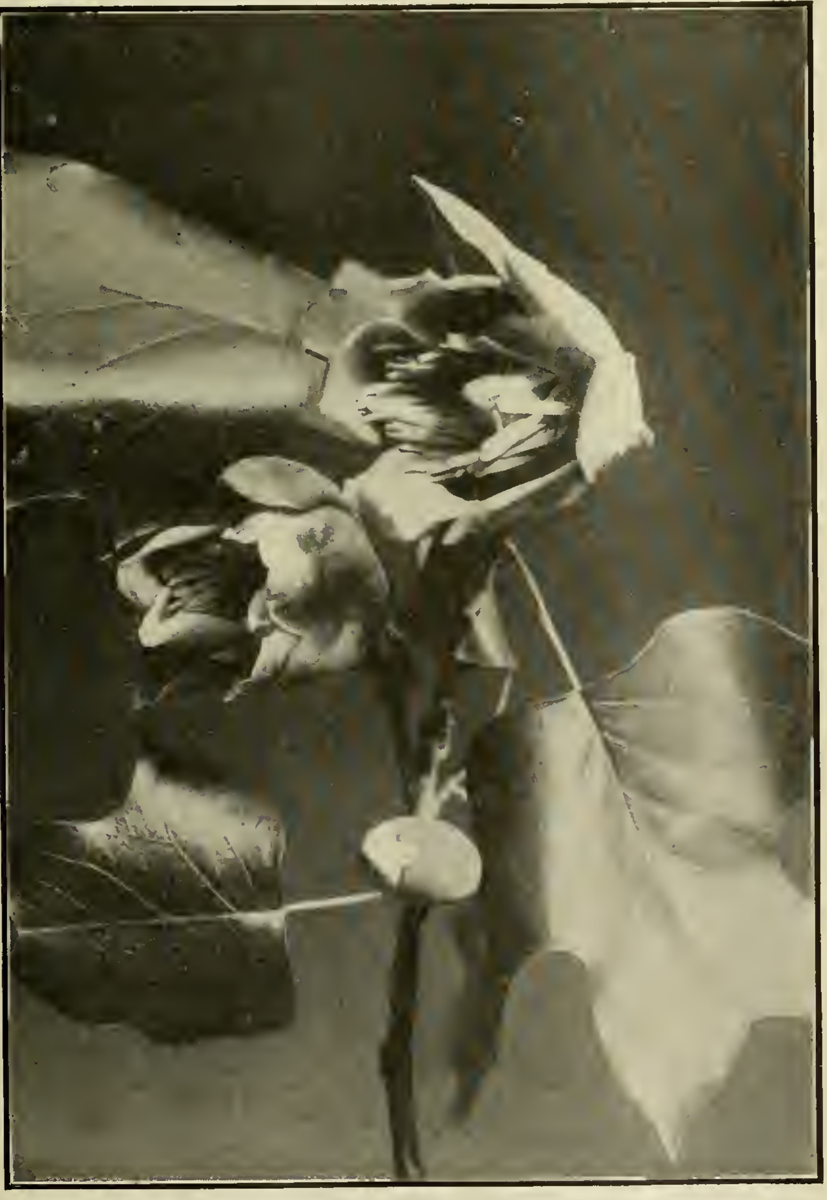


FIG. 97.—BLOSSOMS OF THE TULIP TREE

Selling Honey by Automobile in Montana

BY GEORGE W. YORK.

THERE have been many ways of disposing of the honey produced by beekeepers, but perhaps not many have, as yet, used the automobile to the extent that Mr. and Mrs. Arthur Sires have done the past year or two.

They found that as Washington was a good bee-country, and beekeepers increased in numbers, it brought more honey on the market, for which a place must be found. As the smaller producers did not launch out, it was left for the larger ones, like the Sires brothers, to take hold and find a more extensive market. So they figured.

They found it almost impossible to get grocers to handle honey to any advantage by pushing the sales along, and for several reasons. One was that they were not interested; another, they were not capable of explaining the many uses of honey, as they had not used it themselves. Some think it is to be used only on the table, and call it a luxury. But not so, for honey can be used in many ways. Therefore, as the Sires brothers had the honey, they decided to find a market for it. But as they could not reach the main honey-eaters (the farmers) by railroad, they bought an automobile, and had it fixed up in proper shape for selling honey, as shown in the illustration herewith.

It took some fine figuring, as they wanted to carry their "hotel" with them, for many times they found it hard to get a place to stop over night, although the farmers, as a rule, are the most free-hearted and generous people one can meet.

After getting things all arranged, Arthur Sires and his hustling helpmeet started out. October 26, 1915, they left their home in Wapato, Wash., and after traveling over 3600 miles they landed at Ryegate, Mont., where they made a short visit with a sister of Mr. Sires, a Mrs. Gregg. This was July 14, 1916. During that time they disposed of over 47,800 pounds of honey, mostly at retail.

They followed the railroad mainly, so as to take in each town. They would usually drive up to the post-office and meet many who were coming in for their mail. Some of them would buy honey, while others would stand around and ask questions, which were gladly answered, as far as Mr. and Mrs. Sires were able to do.

When they found they had been "on exhibition" long enough, they would make a house-to-house canvass, where they found many who were glad to listen to the explanations of the real value of honey as a food, and the many ways in which it could be used, such as making cakes, cookies, gems, putting up fruit, preserves and jellies. Mrs. Sires being along, she would speak from personal experience, which helped greatly.

They also had 1000 recipe books explaining how extracting is done, and the numerous ways in which honey is used in cooking and otherwise. They found so many who were ignorant of the real value of honey, that there was need to explain, and also leave literature for them to read.

Mr. Sires now has an order in for 5000 recipe books, which they expect to hand out to those who are interested. They may never hear again from some of those people they saw, and to whom they sold honey, but Mr. and Mrs. Sires feel that the seed has been sown on good ground, and some one will reap the reward some day.

Another thing they did in the way of advertising that is well worth mentioning, was the putting up of small printed wooden sign-boards on fences along the way, telling where honey could be bought of the Sires brothers. Mr. Sires said it was surprising how many orders they got through those sign-boards.

Mr. and Mrs. Sires are now located at Great Falls, Mont., with a branch house. They find Montana a good field in which to sell honey, although Montana honey is also fine. But there is so little of it, as the summers are so short; therefore, the demand cannot be supplied with local honey, which thus leaves room for others to come in and take advantage of the shortage.

If you want to have a good outing, and also see the country, just extract your honey in the fall, get an automobile, and then start out. Mr. and Mrs. Sires surely have tested out their plan of disposing of the honey crop, and it certainly works well. No doubt others will "go and do likewise."

Mr. Sires passed through Sandpoint, Idaho, twice during the recent few months, and it was my good fortune to meet him and have several interesting interviews with him. He uses paper packages, shipping the honey in 60-pound tin cans to where he wants to retail it, and then fills the smaller packages with it there.

While there is a great deal to the producing end of honey, unless it is well sold the results are not very encouraging. It is seldom, however, that a good producer of honey is also a good honey salesman, but I believe that with the methods used by Mr. Sires almost any beekeeper could easily dispose of his honey crop, regardless of its size. At any rate, the plan is well worth a sincere trial.

Sandpoint, Idaho.

About Bee Demonstrations

BY FRANK C PELLETT.

AFTER giving a live bee demonstration in conjunction with a public lecture for several years, I have decided that it is of very doubtful value and have discontinued it. There is nothing which will attract more attention in an average locality than such a demonstration, and if it were possible to control the nature of the publicity that resulted, a properly conducted demonstration might be valuable. I have always taken pains to explain that there is no mystery connected with the performance, and that nothing which might be done would be strange to well informed beekeepers. After explaining in detail the manipulation of the hive as practiced by beekeepers generally and the method of controlling the bees, I have often been confronted by glaring headlines in the newspapers something like this, "SAMSON IN THE LION'S DEN HAD A SNAP COMPARED TO THIS." The reporters never overlooked such an opportunity for a sensational story and the kind of publicity that usually results often does more harm than good, both to the operator and to the industry.

Personally, I have never undertaken such stunts as some do. I regard it as a serious mistake to don a bathing suit for such a performance. I formerly removed my coat, but of late have decided that it is better to make no special display of preparation. As far as I am willing to go in the way of stunts is to fill a hat with bees and put it on my head. Of course, the bees are handled freely with the bare hands, which is amply sufficient to make the average crowd gasp.

In my opinion, all that is desirable in such a demonstration is to show the usual manipulations of the hive. If the performance becomes sensational rather than educational, it is unworthy of any self respecting beekeeper. Because it has seemed impossible to avoid the element of sensation I have chosen to abandon the practice, although offered a very attractive opening for giving it on Chautauqua platforms next season.

There are some very good reasons why beekeepers should use the live bee demonstration. If one is a good speaker it gives a splendid opening to inform the public concerning the production of honey, its proper care and importance as a food. The results are particularly striking after it has been given to an audience of children. If properly veiled suggestions are thrown out, a considerable portion of them will go home and induce their mothers to order honey at once.

Many wrong impressions concerning bees, which can be corrected in connection with such a public appearance, can be presented to so many people in no other way. Demonstrations at fairs are of doubtful value at any time. The crowd is constantly moving and is there only for what is to be seen. Unless one can talk to the same people for several minutes there is little opportunity to give an intelligent presentation of the subject. Much depends upon the speaker, his skill in presenting his subject and the attitude which he chooses to assume. Too many men cannot avoid the temptation to appear in a sensational light, and to seem to exercise some mysterious influence over the bees. To place oneself on the level of the ordinary street fakir is to cheapen the entertainment and leave a wrong impression in the minds of the audience.

VALLEY
HONEY

MR. AND MRS. ARTHUR SIRES ON THEIR 3600 MILE TOUR IN 1915 SELLING HONEY

EQUIPMENT FOR DEMONSTRATIONS.

The tendency with me has been constantly to lighten the equipment carried from place to place. During the years of my early experience I used a full colony of bees and a large wire cage. The hive was covered with wire screen to keep the bees from smothering, and shipped from place to place by express. The cage was made in sections so that it could be taken apart and crated for shipment. I soon found that I was carrying about more bees and more weight than was necessary. A small hive which would contain four frames and allow some extra space was made for the purpose. Four dry extracting combs were placed in this small hive and as many bees as seemed desirable were shaken onto the frames. This hive was fitted with a canvas cover and handles so that it could be carried like a suit case.

Enough feed to keep the bees during the trip was given either in the form of honey or of sugar syrup. On one occasion, before dry combs were substituted for combs from the hive, I lost the bees which I was taking with me for a demonstration. It was a very hot day and the coach in which I was riding was very close. The bees crowded against the wire cloth above the frames in a dense mass and remained there until the combs had melted down, and most of the bees were so mussed up that little could be done with the outfit.

On arriving at my destination I found myself in a quandary. There seemed to be no beekeeper worthy of the name within reach. I was advertised to give a live bee demonstration the following afternoon, and no bees were in sight with which to do it. Since it was late at the time the town was reached there seemed nothing to do but wait until morning and go in search of bees. The most diligent search failed to locate anything but a colony of black bees in a huge box about as big as a trunk. The frames were missing and combs were built in various windings, common to box-hive bees. Since there was nothing else available it was the big box or nothing, so I negotiated with the owner for the loan of his bees for a rental of one dollar for the day. My unfortunate hive was carefully cleaned and the combs pieced back into the frames as well as was possible and tied in place. The big box was then moved a rod or two away and the little hive placed in its former position. The bees in the box were then smoked tremendously until they came pouring out of the hive in a perfect cloud. After working for an hour I finally got a quart or two of the bees into my little hive and gave the demonstration without mishap.

One traveling with a live bee demonstration will find more kinds of experience than he ever dreamed possible. The janitor will often decide that the crate containing the cage is full of some new fangled window screens and proceed to nail them to the side of the building or raise some kind of rumpus because he was not consulted before an order for screens was placed. On one occasion an express driver, who was sent to transfer the outfit to another building where the demonstration was to be repeated before another audience, took it to another railroad and shipped it by freight. My address was painted on the outside of the crate to avoid its going astray. It so happened that they were loading a car of freight at the time the driver reached the depot, and within a few minutes it was on its way. The particular railroad to which it was delivered does not pass anywhere near my home and I did not see the outfit again for weeks.

CAGE FOR BEE DEMONSTRATIONS AND CRATE IN WHICH IT IS SHIPPED FROM PLACE TO PLACE

The cage method was finally abandoned when the address was to be given before an audience in a Chautauqua tent or auditorium. At a fair some kind of cage is necessary as the crowd is moving all the time and in every direction. The Chautauqua audience, however, is at a sufficient distance from the speaker, so that there is little annoyance from flying bees if properly handled. It is sometimes difficult to gather all the bees back into the hive and the speakers who follow are often very timid about standing among flying bees.

At the last, my equipment consisted only of the little hive with two dry extracting combs and two empty frames to allow more clustering space and better ventilation. In addition, a small smoker was carried to show the audience how bees are controlled by the use of smoke. In order to insure that the bees would be peaceable when the hive was opened, they were fed liberally on honey an hour or two before the lecture. A small stream of honey was spread over the wire-cloth on top of the hive to give as many bees as possible access to it. Within a few minutes it would all be taken up and the bees would be very quiet.

To get young bees I usually went to a hive, in the middle of the day, when the old force would be in the field, or moved the hive several feet from its normal position for several hours. It is the old bees which are most likely to make trouble, and in this way it is easy to avoid getting them into the traveling hive.

Persons who aspire to give public demonstrations frequently ask what price they should receive for such work. That question can be answered only in a general way. The beekeeper who wishes to advertise his product at his country fair may well afford to give the demonstration without compensation, for the advertising it brings him. But when a man must carry his outfit for a long distance and take the time from his work, it is worth something. What one can get depends upon his ability to entertain a crowd. At the start I gave demonstrations for $25 each. At the last I was getting $60 for each demonstration, and was offered a much better price to continue through another Chautauqua season.

In general a man can make more money in his own bee-yard at that season of the year than he can by traveling from place to place giving public exhibitions. From my own experience, I can assure the reader that it is also much more agreeable, and I am now increasing my apiaries with the expectation that the added sales of honey will more than make up the difference in income from giving up the public address.

My Neighbor's Garden

BY CHARLES DUFF STUART.

THE advent on our premises of honey-bees diverted all thought from the proposed petition. Many of our neighbors were in favor of settling once for all a vexatious question by requesting the authorities to condemn as a nuisance and remove from the public highway a hedge of eucalyptus trees, and an equal number were for "peace at any price," in all things. The proponents needed one more "yea," and my seat on the fence was not rendered more comfortable by the knowledge that I held the balance of power.

Fortunately we were completely engrossed in our new possessions. We hovered over them as a mother her first-born, always deeply concerned over the welfare of her Majesty, the Queen, and when the bees flew away and failed to come back immediately, we started in a mad pursuit that all too frequently came to an abrupt end just outside the imposing iron gates of my neighbor's garden, which were locked against human intruders. We wondered if the weather were too warm for "our little friends," and noting that the hives were stationed in the shade of the much debated eucalyptus trees, we fell to wondering if they were warm enough, which again brought us back to the question of that petition.

It was 20 years ago that my neighbor across the way planted the hedge all round his 10-acre lot. That was long before we became neighbors, and it was also many years before the trees had attained sufficient growth seriously to compromise friendly relations with other old residents near by. But later arrivals were not so fortunate. The trees towering more than 70 feet, not only separated even more completely from its surroundings the already secluded 10 acres, but also divided the community against itself. Those living on one side claimed "too much shade," and on the other, "obstruction to view." The fruit orchard of a third had ceased to bear, owing to the sustenance of the soil having been extracted by the long roots of the trees that spread in every direction while a fourth complainant was completely mollified when the lower and more dangerous of the overhanging branches were sawed off and presented to him for firewood.

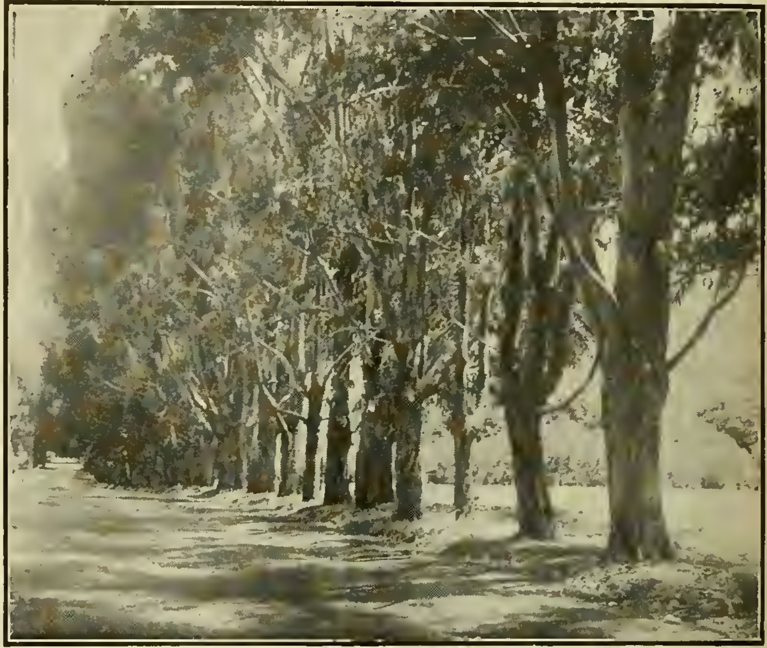
As for us, we admired the splendid avenue bordered by the tall straight sentinels, as did all newcomers; but after paying a workman a third check to clear away the long leaves that clog the gutters of our cabin roof during heavy storms, and numerous futile efforts to free the yard of fallen limbs, I grew thoughtful and wondered if the rumors I had heard concerning the undesirability of that hedge were not true. I remonstrated with my neighbor's gardener who helped me rake and burn the trash. Even my neighbor himself came out and helped until finally he declared he wished he had never planted those trees; it cost so much to clean up the rubbish.

He was so emphatic that I wondered if after all I would not be doing him a real kindness to support the aforesaid petition. I hinted that the cause of the trouble might be removed, but he refused to consider it. "What, remove trees that had taken 20 years to grow! Besides, they were too tall to cut. There was no room for them to fall, and no one would take such a job anyway." I could have suggested our anæmic neighbor who would have hazarded most any undertaking for firewood; but I held my peace also to the top rail of the fence. I had more personal worries. Our bees that had shown such activity earlier in the summer had almost ceased to fly, and were cross to the point of savagery; and whereas I had formerly been alarmed lest they would fail to come back, I had now become alarmed because they would not fly forth.

This state of affairs had become almost intolerable when one bright morning about Nov. 15, we heard a subdued roaring which grew louder as we crossed the road. It came from above. We looked up and discovered our bees busy in the tops of the eucalyptus trees, in which hung great clusters of white bloom. By using a huge pair of pruning shears that operate with rope and pulley, the head gardener brought down a splendid specimen. We carried our treasure to the house. It was as large as a small Christmas tree. Soon the books and papers on the table beneath its spreading branches were daubed with a substance similar to molasses, which we discovered came from the cups of the flowers. The disc of the nectar cup in the eucalypts is fully as large as a 10 cent piece, and in the room at a temperature of 70 degrees, yields two or three heavy drops of fluid when held in any position out of the horizontal.

We removed the spray to the porch where it was eagerly pounced upon by the bees. Through a magnifying glass, the bee appeared to dip its tongue deep and suck up the nectar rather than lap up the liquid where the flow is more slow. Close observation showed a pumping motion or convulsive movement of the abdomen, as though the bee might be sucking the nectar through its tongue or, rather, through the round tube on the tongue.

The blossoms continued throughout the winter and disappeared entirely only about the first of June. During that time there was no month when the hives did not contain some brood. The bees were on the wing, almost rain or shine, since they actually dodged out between showers whenever the sun was warm enough to start the nectar to flowing. I did no winter feeding last year and the colonies came into spring with the hives full of stores.



A ROW OF EUCALYPTUS, THE "TALL STRAIGHT SENTINELS"
(Photograph by Alice Coldwell)

A SPLENDID SPECIMEN OF THE EUCALYTUS BLOSSOM
(Photograph by Alice Coldwell)

One day my neighbor unlocked the iron gates and crossed the road to wish me a Happy New Year. As he turned away he noticed the row of white hives. "What do your bees get to eat in the winter?" he asked evidently associating flowers and bees only with springtime.

"Just now," I replied, "they are living off your eucalyptus hedge."

He eyed me cannily for a moment, then as a satisfied grin overspread his features, "Well, I'm glad those trees have been found good for something, at last."

Los Gatos, Calif.

A Farmer Beekeeper's Success

BY C. E. MILLER.

I AM living on a farm ten miles north of Scranton, Pa., where, in 1812, my grandfather settled; here my father was born and died, and here I also first saw the light of day. My residence, which has all modern conveniences, is the third to be built on the same cellar, and is only one of several buildings erected by the financial aid of the bees.

In the spring of 1870 I attended a public sale where I purchased a large hive of black bees at $8.25, and well do I remember tying it with a rope for its removal, as it was split from top to bottom. This colony was the nucleus of my present apiary.

When these bees swarmed I put them in a movable-frame hive, transferring also the parent colony. It was in 1875 that I bought my first Italian bees of one George Cramer, of Thompkinsville, Pa., and to him credit is due for bringing to my attention the American

Bee Journal, for which I subscribed, continuing a constant reader for 25 years, and then failed to renew. I missed its regular visits more than I anticipated, so before that year ended I sent my remittance, which I have not failed to do since, making 41 years I have taken it. All these years I have carried on farming in connection with beekeeping.

For thirty years I have made my own foundation, and that of neighboring bee-keepers, on a Given press; also most of my hives, using a Barnes' foot power saw, and consider them as accurately constructed as those turned out by factories.

My present apiary numbers 115 colonies. We had a bountiful fall honey flow from buckwheat and goldenrod. European foulbrood first made its appearance in my yard about five years ago, and I have put up a strenuous fight against it, and in this I found the American Bee Journal an invaluable aid, proving once more that we are never too old to learn.

APIARY OF C. E. MILLER AT CLARK'S SUMMIT PA.

HOME OF C. E. MILLER, WHO HAS BEEN A SUBSCRIBER TO THE AMERICAN BEE JOURNAL FOR MANY YEARS

I find in my home market a ready sale for my entire crop, and this market demands both comb and extracted honey, for which I am always able to obtain a fair price. I formerly kept a part of the bees in a house, the use of which I have discontinued, as I lost a large percentage of queens at the mating season.

Clark's Summit, Pa.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

How to Hatch Bee-Eggs in an Incubator?

In American Bee Journal for December, 1916, page 424, "Montana" asks the question, "Can you give me some information on how to hatch bee-eggs in an incubator?" and Dr. Miller replies, "No; I never heard of bees' eggs being hatched in an incubator, and very much doubt if it can be done."

A California sister, Virginia P. Hewitt, referring to this, sends an ad clipped from the Diamond Match Co.'s catalog, the ad offering queens for sale, and the statement is made: "All our queens are hatched in Petaluma electric incubators." She adds: "I read a few days ago of an Oregon woman who had hatched some queens in an incubator just as an experiment."

It is perhaps unfortunate that in beekeeping parlance the word "hatch" is used with two different meanings. We say "The young larva hatches out of the egg three days after the laying of the egg," and we also say: "The young worker-bee hatches out of its cell three weeks after the laying of the egg. According to that the same being hatches twice, and some have advocated that the word "hatch" should apply to the first act only, and that in the second case we should say, "The young worker-bee emerges from its cell three weeks after the laying of the egg. It might, however, be a little awkward in some cases to be denied the use of the word "hatch" with both meanings. It would hardly do to say, "All our queens are *emerged* in incubators."

However all this may be, it is plain that in the ad the hatching in the incubator refers to the emergence of the queen from her cell. There is nothing new in that. A good many years ago there was much said in bee literature about hatching queens by artificial heat, and it was then practiced to a considerable extent. When young queens are hatched in an incubator, the cells are put in the incubator after they are sealed; probably the riper the better, for it has not been claimed that better queens were reared in an incubator, only that it was more convenient for the beekeeper; just as it is for his convenience that queen nurseries of the present day are used.

But the hatching about which "Montana" inquired was the hatching of *eggs*, which is quite another affair. If any one thinks Dr. Miller is not justified in doubting the possibility of hatching bee-eggs in an incubator, it ought not to be a hard thing to test the matter. Just put in the eggs, and then watch for the appearance of the tiny larvæ. Even if the young grub should appear, it would hardly survive very long without the presence of nurse-bees to feed it. On the other hand, when a sealed cell is put in a nursery, and the young queen emerges from it, she will get along quite well for a number of days with no nurse-bees present, provided a lump of queen-candy has been put in the compartment with her.

◆

Wintering

I am very doubtful as to how to winter my bees. We have a cement base-

ment in which we have a heating plant for the house, and we have placed the hives in the basement and have left the entrances open. The bees fly out, and, of course, get cold and immediately fall to the floor. Can you advise me how to winter them under such conditions. [MRS.] A. J. BERG.
Thief River Falls, Minn.

You say you have placed your bees in the cellar. It was a mistake to put bees in cellar in October. No wonder they are not quiet in their hives. The first thing to be done is to hustle them out of the cellar and onto the summer stands. Then put them into the cellar again the next day after the last flight they take before winter sets in. It will take some guessing to know just when that will be, and possibly, in your locality in Minnesota, it may be safe to assume that when bees fly any day after the middle of November that that is their last flight, and that they should be cellared the next day.

With a heating plant in the cellar, like enough the problem will be to keep the cellar cool enough without letting too much light in; for the cellar must be kept dark. But if it is with you as it is here, the heat in the cellar will be an advantage, for it will allow you to have abundance of pure air without cooling the cellar too much. Possibly it is so that you can let the air come into the room where the bees are, in some indirect way, so as to leave the bees in the dark. If not, then you can cool the bees off at night and keep all closed daytime. You will likely find a temperature of about 50 degrees best, but at any rate try to keep it at that point where the bees are quietest. Keep the bees content in their hives by keeping the cellar dark, at the right temperature, and with plenty of pure air.

Queen-Rearing

Since having the pleasure of meeting the Editor at Hondo, Medina Co., Tex., last spring, I had a visitor to my apiary here in Castroville, in the person of Mr. Henry Brenner, of Seguin. He came in response to an inquiry of mine for more light on the subject of queen rearing. His article on that subject, which I read last spring in the American Bee Journal, seemed to me to be filled with very valuable suggestions, and if I don't succeed in rearing some good queens after his very kind instructions, it certainly will not be Mr. Brenner's fault.

My son, age 14, has been a beekeeper for five years with seven colonies of his own, which he has paid for out of the proceeds from his honey. He is also a subscriber of the American Bee Journal and takes great interest in reading it. Mr. Brenner praised the condition of his hives and he is now more enthusiastic than ever.

I am writing this to let you know that I feel very thankful to the American Bee Journal for being the means of my becoming acquainted with Mr. Brenner and his method of queen rearing. [MRS.] J. T. FITZSIMON.
Castroville, Tex.

It is good to know that you are interested in rearing queens, for that almost certainly means improvement of stock, since you will no doubt keep track of the yield of each colony and breed from the best.

In the picture you are seen holding a frame flat, and you may be told that a frame should never be held in that way, lest the comb break out, and that a certain routine of motions should be made in turning a frame over, so as to avoid holding a frame flat at any time. That was all right 50 years or so ago, but in these days of wiring and foundation splints there is no need to have combs so insecure that they will fall out when held flat. Generally one can see into the cells better when holding the frame flat, and it saves time in handling. At any rate, in this locality frames are held just as you hold them.

MRS. J. T. FITZSIMON AND HER SON IN THEIR SMALL APIARY AT CASTROVILLE, TEX.

MR. BRENNER, OF TEXAS, POINTING OUT THE QUEEN

MISCELLANEOUS NEWS ITEMS

Honey Crop of 1916.—The monthly crop report of the Department of Agriculture for November, 1916, gives a comparison of the average per-colony yield in the years 1915–1916. The total average for 1915, in the entire United States is 42.3 pounds per colony, and in 1916 52.8, a difference of 10½ pounds, with an increased spring-count number of colonies of 2.8 percent. The crop of section comb honey is 40.3 percent, that of extracted 39.5 percent, and that of bulk comb honey 20.2 percent.

Florida reports the largest crop per colony in 1916, 85 pounds, while Missouri shows the largest increase over the 1915 crop, 75 pounds in 1916 to 35 in 1915. The poorest showing is made by North Carolina, which shows only 23 pounds per colony, a decrease from 1915 of 19 pounds.

The total increase of production of honey is 23.3 percent, and as prices are about as high as last year, the dollar and cent result will prove very satisfactory.

Of the total crop, 67.7 percent is sold locally, and 32.3 percent is shipped to outside markets, an increase of local consumption of about 7 percent, over the sales of 1915.

Texas News Items.—Mr. Henry Brenner, of Seguin, one of the best known Texas beekeepers sailed for Porto Rico Nov. 18, from New York on the steamer Carolina to do some special investigation work for the A. and M. College. He is looking into beekeeping conditions in the tropics and making an investigation of marketing conditions.

State Entomologist, F. B. Paddock, and Prof. Louis H. Scholl held a meeting in San Antonio on Nov. 14 with other prominent beekeepers looking toward the request to be made on the legislature for increased appropriations to be used in the Foulbrood Eradication Work.

Director B. Youngblood, of the State Experiment stations, has signified his determination to provide for the establishment of a State experimental apiary in his forthcoming estimates. This is the result of the agitation of Mr. Louis H. Scholl in urging that the State of Texas establish a series of apiaries in the honey-producing centers so that practical experiments may be made under actual apiary conditions in the South. Most bee literature and former experiments of this kind have referred to northern conditions. In Texas, climatic and honey conditions being so different it is advisable to definitely determine what modification of accepted usage is most desirable.

If the bees had not been on high benches, Louis Werner, of Edwardsville, Ill., would have suffered again from flood conditions

Mr. T. P. Robinson, of Bartlett, as superintendent of the State Fair at Dallas, has just successfully staged one of the best and most instructive bee and honey exhibits ever held in the South. Under the efficient management of Mr. Robinson these exhibits have grown to be of increasing value to the industry every year.

Southern beekeepers will welcome the new eight-page paper, The Beekeepers' Item, published at New Braunfels, Tex., under the editorship of Mr. Louis H. Scholl. The initial number appeared Dec. 1.

The Texas Honey Producers' Association has perfected its organization and will begin operations Jan. 1. E. G. LeStourgeon has been elected as manager and Mr. A. M. Patterson, of the Adams State Bank of Devine, as treasurer. The business office will be established in San Antonio. The directors met on Nov. 25 to approve bonds in the sum of $10,000 each, furnished by the manager and treasurer. The association will be incorporated for $25,000. Subscription books are open to Jan. 1, and any one who has not subscribed for stock has the opportunity of doing so up to that date.

Mr. H. D. Murray, of Mathis, Tex., reports the meeting of the Live Oak County Association held at Three Rivers on Nov. 4, as having been very successful. Over 3000 colonies of bees were represented, and not nearly all of the beemen of the county were present. The next meeting was held in Oakville, Monday, Dec. 4.

Honey stocks in the hands of the producer are about exhausted. There has not been such a complete clean-up of the surplus stock in a number of years. These bee-men who held their honey during the period of demoralized prices in the summer have been rewarded by securing from two to three cents per pound more for their product than their neighbors. It is significant that the advance in prices offered to the producers began just as soon as the announcement was made of the successful organization of the Texas Honey Producers' Association.

In the horsemint districts bee-men are anxiously looking for rainy weather. This plant is a biennial and must have sufficient moisture when it comes in the fall to get its root system well developed. Good flows of horsemint honey are gathered in years following a wet fall and winter. It is a peculiar thing that the contrary is true of mesquite. The best mesquite honey crops are always gathered after a dry winter.

The Producers' Association formed by the beekeepers has already secured members controlling over 20,000 colonies of bees. This means that if next year is a normal honey season some two million pounds of honey will be marketed directly by the producers themselves through their own selling organization and under an association label.

The most recent estimates of the 1916 honey crop place the figures for honey sold as 5,000,000 pounds. Of this three-fifths was raised in southwest Texas, about a million pounds in the alfalfa country of the Pecos Valley and west Texas and another million in the cotton belt. And yet the surface has hardly been scratched. It has been asserted by agents of the Department of Agriculture that Texas could easily and profitably support ten times the number of apiaries that it has. Every farmer who feels the high cost of living and is tired of eating out of a paper bag could well investigate the possibility of making a start toward independence by securing a couple of hives of bees.

E. G. LeStourgeon.

* * *

Those Comb Honey Rates.—As stated in our last issue, the beekeepers of the central West made a united effort a short time ago to have the rates on comb honey lowered within reason, as they now are double first-class on local shipments in the central West, and West!

The appearance of the representatives of the beekeepers before the rate commission has resulted in a reduction of the rates, although they are not yet as low as desired. It was hoped to have comb honey in the second-class when properly packed instead of first-class. The following is a quotation from the representative of the commission:

"We beg to quote below for your information an item which will appear in Supplement 5 now in the hands of the printer, and which will become effective on or about Jan. 25, 1917:

"Comb honey in section frames: In wooden boxes only, LCL, D1. In wooden boxes with or without glass fronts, two or more enclosed in wooden boxes only or in crates, see Note LCL 1. In packages named, CL Min. Wt., 30,000 lbs., 4. Note comb honey in section frames in wooden boxes with or without glass fronts, two or more enclosed in wooden boxes only or in crates, must be protected by a pad of hay, straw, excelsior or similar material not less than four inches in thickness in the bottom of box or crate and the package plainly marked on top 'Fragile—this side up.'"

It is to be noted that shipments unprotected still remain at double first-class. But surely there will be no comb honey shipped by reliable beekeepers which will be subject to this rate. It is the uninformed and careless beekeeper that makes the rise in rates necessary to cover damages to honey in shipping. It behooves us to educate every uninformed beekeeper on proper methods of shipping honey as well as on any other topic of general interest.

* * *

Bee Pep.—That inimitable secretary of the Iowa association, Hamlin B. Miller, conceived the idea, before their meeting was held, to send to all members and prospective members a little specially gottten up 4-page paper entitled, "Bee Pep." It contained news items of special interest to Iowa beekeepers, and was designed to stimulate the attendance at the annual meeting in Des Moines. It undoubtedly did; witness the crowd in attendance at the meeting.

WITNESS THAT we have already two special candidates available to mention in the next annual issue of that "Bee Pep," and they are not Iowa beekeepers, either, Chas. and Carol Schmidt, of Marysville, Kan. In answer to one of our circular letters urging them to renew without delay, here is what they wrote:

Dear Sirs:—We received your last letter.

We understand what you intend to do about improving the paper, and believe that you will keep your promise. We would like to take the American Bee Journal very much because it is interesting.

We are only ten and twelve, and are very busy with our school work. For this reason we will subscribe next spring. We followed the Stephens method, and we got one thousand pounds off of six hives and no swarms. We used the double hive method explained by Mr. Geo. W. Stephens, page 163 in the May issue of the American Bee Journal. There is but one objection to the plan that we have, and that is it is hard to find the queen, because of the crowds of worker-bees. We have thought of a way to avoid that trouble. This is the plan:

Prepare an empty hive, and have it handy at the side of the hive in which you wish to operate. First take a frame out of the full hive and look over it. In case you do not find the queen put the frame in the empty hive. Then take out the next one; look at it. If you do not find the queen in that put it in the empty hive beside the first. Do likewise with all the rest, and if you do not find the queen in any of them look around the inside of the hive you took the frames from.

We hope you will find this plan to an advantage. Yours truly,

CHAS. AND CAROL SCHMIDT.

Marysville, Kan.

The secretary of the Kansas association will please note that here are two boys who will want to be joining some of these times. Perhaps he needn't mind; they'll undoubtedly hunt him up when the time arrives.

CUPID AND THE BEE

Cupid once upon a bed
Of roses laid his weary head;
Luckless urchin not to see
Within the leaves a slumbering bee!
The bee awaked—with anger wild
The bee awaked and stung the child.
Loud and piteous are his cries;
To Venus quick he runs, he flies!
"Oh mother!—I am wounded through—
I die with pain—in sooth I do!
Stung by some little angry thing,
Some serpent on a tiny wing—
A bee it was—for once, I know
I heard a rustic call it so."
Thus he spoke, and she the while
Heard him with a soothing smile;
Then said, "My infant, if so much
Thou feel the little wild bee's touch,
How must the heart, oh, Cupid! be,
The hapless heart that's stung by thee?"
THOMAS MOORE, "*Odes of Anacreon.*"

Departmental Changes.—The increased appropriation of $5000 for extension work in beekeeping has added three men to the government staff under Dr. Phillips.

C. E. Bartholomew, formerly at Ames, Iowa, as instructor, will be located at Memphis, Tenn., where his extension work will be conducted in cooperation with the Tennessee State Department.

Geo. H. Rea, of Pennsylvania, is doing work in the Carolinas, taking up the work where E. G. Carr, out last year for a short time only, left off.

Kennith Hawkins, formerly a queen-breeder in Illinois, will do general extension work in the South, changing locations as demands are made upon his time.

The place of Prof. Bartholomew at Ames is to be taken Jan. 1 by F. Eric Millen, State Bee Inspector of Michigan in 1916; while Mr. Millen's place, in turn, will be taken by B. F. Kindig, formerly of Indiana, and connected with bee inspection there.

Changes at the Iowa Agricultural College.—As stated elsewhere, Prof. C. E. Bartholomew has resigned his position of assistant professor of apiculture in the Iowa College of Agriculture and has entered the service of the government.

Prof. F. E. Millen, formerly of the University of Michigan, has been elected to succeed him. While the course in beekeeping at the Iowa institution is good now, there is much interest manifested in its development on the part of the beekeepers, and the college authorities promise to increase the appropriation for the work as rapidly as circumstances will permit.

Doctor Pammel announces that the first of the series of bulletins on honey plants and nectar secretion which are under way in the Botanical Department will shortly be published. He expects to have two of these bulletins ready for distribution before the close of the school year. Dr. Pammel is working along new lines and the bulletins from his department will be the first from any institution in America dealing with these special problems. The appearance of these bulletins is awaited with much interest.

New Jersey Meeting. — The annual meeting of the New Jersey Beekeepers' Association will be held in the Entomology Building, Bleeker Place, New Brunswick, N. J., on Tuesday and Wednesday, Jan. 9 and 10, 1917.

E. G. CARR, *Sec.*

Montana Beekeepers to Meet.—The Montana State Beekeepers' Association will meet this year in Bozeman in conjunction with Farmers' Week at the State College Jan. 21 to 28, 1917.

S. F. LAWRENCE, *Sec.-Treas.*

Missouri Meeting

The annual meeting of the Missouri Apicultural Society will be held this year in connection with a four-day short course in beekeeping (Jan. 2 to 6) at the State University of Columbia' Mo. Our readers are already familiar with Dr. L. Haseman, the Missouri Entomologist, who is active in promoting better beekeeping in his State.

CONVENTION PROCEEDINGS

Indiana Beekeepers Meet

The meeting of the Indiana beekeepers at Indianapolis Nov. 27 and 28 was attended by some 40 members. Two of the expected speakers, Messrs. E. R. Root, editor of Gleanings, and Prof. Francis Jager, president of the National, were absent, having been detained by other duties.

One of the most interesting addresses was delivered by the secretary, Geo. W. Williams, on the subject which has been his hobby for a number of years, "Honey Sales and Cooperative Advertising." Mr. Williams is well known for his earnest endeavors to get the value of honey as food properly recognized in the household science teaching of the public schools. In his address he compared the timidity of the honey producers regarding advertising to the timidity of a child who does not know the road to his home and is afraid of the street cars that would carry him safely to the very door of that home. The simile is very well taken. The steps that have been inaugurated in different directions to advertise honey and recommend it to the consumers as one of the best and healthiest of foods are already showing results, and our timid honey producers will sooner or later recognize the great advantage of liberal advertising.

The report of the State Inspector, Mr. Frank N. Wallace, who is also State Entomologist, was very interesting and showed that foulbrood is being eradicated by energetic action. Box-hive beekeeping is being reduced throughout the State, only 143 "gums" having been found in the inspection of 1916, while during the first year of inspection over 1000 such hives were found. The total number of diseased colonies found in Indiana in 1916 was 440 of American foulbrood and 96 of European.

Prof. Snodgrass, whose wonderful anatomical studies have been published by the Bureau of Entomology at Washington, D. C., was present and read an essay on the individuality of the bee, showing how each bee works on her own independent instinct without orders or guidance from others in a republic where there is no congress, no laws except natural laws and no loafers, each individual using its ability to the utmost for the common good. The bee teaches man a valuable lesson.

Mr. Geo. Demuth, of the Bureau of Entomology, working under the direction of Dr. E. F. Phillips, was present and spoke of the continuance of the experiments on wintering made at Washington for the past few years. It will be remembered that very positive facts were ascertained concerning the temperature of the hive cluster in winter. But there is much yet to learn on this subject. The relation of the size of the colony to the production of heat, of the consumption of honey to the temperature, etc., will prove of great benefit. These matters are being investigated and the results cannot fail to prove very useful in the wintering of bees in cold climates.

Essays by Miss Piel, of Columbus, Mr. Erbaugh, of Onward, Mr. Swails, of Lebanon and others, helped to increase the interest. It was a well managed meeting which deserved to be attended by hundreds of Indiana apiarists, instead of by scores. The beekeepers of Indiana need to remember that such meetings are arranged to promote their industry, and should give their association their hearty support. The same criticism might be applied to Illinois, where the meeting of a very efficient beekeepers' association is not attended usually by more than 40 or 50 members, when several hundred might profit by attendance both in pleasure and increased knowledge.

The Iowa Convention

The fifth annual convention of the Iowa State Beekeepers' Association, which was held in DesMoines Dec. 5 and 6, was the most successful in its history. It was estimated that 200 were in attendance. E. R. Root, editor of Gleanings, Dr. E. F. Phillips, of Washington, D.C., Prof. Francis Jager, of Minnesota, George W. Williams, of Indiana, and M. G. Dadant, of this office were in attendance from outside the State. The rooms furnished by the Chamber of commerce were convenient and accessible, and the interest did not lag for a minute from start to finish.

Prof. Bartholomew, the president, was unable to be present, having recently taken up work for the government in the State of Tennessee. In his absence Vice-president Bleasdale presided.

President Jager, of the National, was warmly greeted in spite of the fact that at its last meeting the Iowa association voted to withdraw from the National affiliation. Prof. Jager outlined matters which could hardly be undertaken except by a national organization, and it was apparent that the Iowa folks are behind the kind of organization that he proposes to develop.

Doctor Phillips outlined the extension work which is being undertaken in the South and the advantages that are likely to come as a result of it. At the 1915 meeting a resolution was adopted asking for such work, and Mr. Pellett was appointed as a special representative of the association to go to Washington and present the matter to congress. Dr. Phillip's plans for the extension work which has been undertaken as a result of the special appropriation seemed to meet with the entire approval of the beekeepers present. It will be remembered that the National took action similar to that of the Iowa convention, and that Mr. Root also went to Washington in the interest of the appropriation.

Mr. Root's discussion of the marketing problem brought out the fact that extracted honey in carlots is no longer to be had although the past season's crop was unusually large in the clover region. Several factors have contributed to bring about this condition. The great rise in price in other food products has helped the demand. The general publicity given to honey by the Airline advertising has also had no little effect.

Space will not permit a mention of the various papers and discussions which filled the time very fully for the two days. Fortunately the papers will be published in book form in connection with the inspector's report, and will later be available to those who apply to the secretary for membership. Secretary Miller has been pushing the membership up rapidly and the interest in the organization is increasing as a result. Provision is made to bind enough copies of the report in cloth covers to supply the members of the association.

The resolutions adopted approved the change in the office of the State inspector as recommended by Mr. Pellett, placing the work in charge of the extension department of the Agricultural College at Ames. They also conferred honorary life membership upon the retiring inspector.

It was decided to hold the next meeting at the same location in DesMoines the first week in December, and leaving the extra dates to be chosen by the secretary and president. B. T. Bleasdale was elected to the office of president; H. E. Roth, vice-president; Ham B. Miller was re-elected secretary-treasurer, and Miss Belle McConnell, D. A. Davis and B. A. Aldrich were elected directors. The matter of a hive products' show in connection with the next convention is under consideration and will probably be undertaken if the beekeepers are willing to supply a sufficient amount of honey and wax to make a creditable display. Provision was made to supply honey to the charity organizations of DesMoines for the Christmas dinners of the poor.

Arkansas Valley Beekeepers Organize

The Arkansas Valley Beekeepers' Association held its first annual meeting Dec. 2 at Mt. Hope, Kan. There were present about 25 live-wire beekeepers, coming from Pratt, Chase, Nickerson, Hutchinson, Burrton, Augusta, Colwich, Wichita, Haven, and Mt. Hope.

In the forenoon visits were made to the apiaries of E. W. Jewell and C. D. Mize. These gentlemen served a banquet at the local hotel.

Immediately after the banquet the meeting was called to order in the Town Hall. While the main purpose of the meeting was to perfect the organization, some time was taken to discuss the American foulbrood disease of bees, which is now so prevalent throughout the entire State.

Mr. O. J. Jones, of Wichita, C. D. Mize, of Mt. Hope, and J. A. Nininger, of Nickerson, were appointed a committee to confer with the several fair boards in an endeavor to have a more favorable premium list for the Apiary Department of all fairs held in the State.

The following officers were elected for 1917: President, Dr. A. G. Raffington, of Hutchinson; vice-president, J. A. Nininger, of Nickerson; secretary-treasurer, J. L. Pelham, of Hutchinson. Directors, O. J. Jones, of Wichita, and Carl F. Buck, of Augusta.

Mr. J. A. Nininger and the Reno County High School, cooperating, invited the association to a Field Meet to be held at Nickerson sometime in May.

The next annual meeting will be held sometime during the first week of next November at Wichita.

J. L. Pelham, *Sec.*

Some Northern Meetings

One of the most interesting features of the Chicago-Northwestern meeting, was the taking of a census or an estimate of the different prices at which its members have sold their honey during the past season. Extracted honey was sold at retail prices ranging from 9 cents to 25 cents per pound. This is too wide a variation, although in some cases there would be some justification for a variation of 5 or 6 cents.

On motion of Mr. J. C. Bull, a committee was appointed to get into communication with all the members during the summer, also with other beekeepers who could be conveniently reached and investigate crop and market conditions. On getting this information, the committee would recommend a minimum price at which honey should be sold; this to be in the form of a recommendation and not dictatory. The chairman appointed John C. Bull, E. S. Miller, N. E. France, E. D. Townsend and L. C. Dadant.

This work will, of course, be very valuable to beekeepers, but previous experience shows that it is very difficult to get correct information and secure it in time to be of great value. The work, however, is along the right lines. The officers elected for the coming year were E. S. Miller president, and John C. Bull secretary-treasurer.

At the Wisconsin meeting at Madison Dr. E. F. Phillips gave a very interesting paper on "Extension Work in Beekeeping in the South." Although the South has more bees than the North, its honey production per colony is much lower. With proper guidance, we have no doubt that the honey production in the southern States can be greatly augmented, which will greatly add to its resources.

E. R. Root explained the "Establishing of a Trade Name for Honey." His pointers on the effects of general advertising and the manner in which it is to be carried out were educational.

The beekeepers of Wisconsin, under the guidance of inspector N. E. France, are doing good work in controlling foulbrood. With the help of the courses of instruction at the University there should be an invigoration of beekeeping in Wisconsin to make it one of the leading States in the production of honey.

One of the interesting features at the Minnesota meeting was the talk given by Prof. Francis Jager on "Apiary Work at the University." He gave some very interesting statistics concerning the pupils who took the beekeeping course at the University. The following question was put to 150 students who took this course: "For what reason have you taken the course in beekeeping at the University of Minnesota?" Out of 150, 30 answered that they expected to keep bees after they left college. The other 120 gave various reasons, some of which were quite interesting. It was found that the 30 who stated they would keep bees after they left the university were already keeping bees. This practically refutes the statement that our courses of education on beekeeping in the universities are with the object of making *more* beekeepers. The fact is that they are making *better* beekeepers, and the few additional beekeepers which are created will be a help to the industry instead of a hindrance.

Kansas Beekeepers Meet in Convention

The Kansas Beekeepers' Association meeting was held at Topeka Nov. 20 and 21. It was decided to divide the State in three sections with a vice-president for each district. They are the southwestern under Dr. A. D. Raffington, of Hutchinson, northwestern (fifth and sixth districts), with Harry A. Huff, of Chapman, with the eastern (first, second, third, and fourth disticts) under A. R. Hackensmith, of Topeka.

Officers for the ensuing year are: President, C. D. Mize, of Mount Hope; vice-president, Dr. A. D. Raffington, of Hutchinson; secretary-treasurer, O. A. Keene, of Topeka.

Plans are already laid for district meetings. By organizing a new association at Hutchinson and the district association to cooperate with the State association, it is hoped to make Kansas the banner State for bees and honey.

The subjects read and discussed at the meeting were as follows:

"The Financial Side of Queen-Rearing"—A. V. Small, St Joseph, Mo.

"Shipping Bees by the Pound to the North and West"—M. C. Berry, Hayneville, Ala.

"Public Exhibits of Bees, Honey, Wax, and Apiary Supplies"—Dr. G. Bohrer, Chase.

"Cooperative Advertising of Honey"—Geo. W. Williams, Redkey, Ind.

"Swarm Control"—M. G. Dadant, Hamilton, Ill.

Discussion—"Securing State Aid for Foulbrood."

"Report of Inspection Work in the Northern Half of Kansas"—Prof. Geo. A. Dean, Agricultural College, Manhattan.

"Report of Inspection Work in the Southern Half of Kansas"—Prof. S. J. Hunter, State University, Lawrence.

"The Production of Extracted Honey"—Harry A. Huff, Chapman.

"Selling the Crop"—J. P. Brumfield, of Galena.

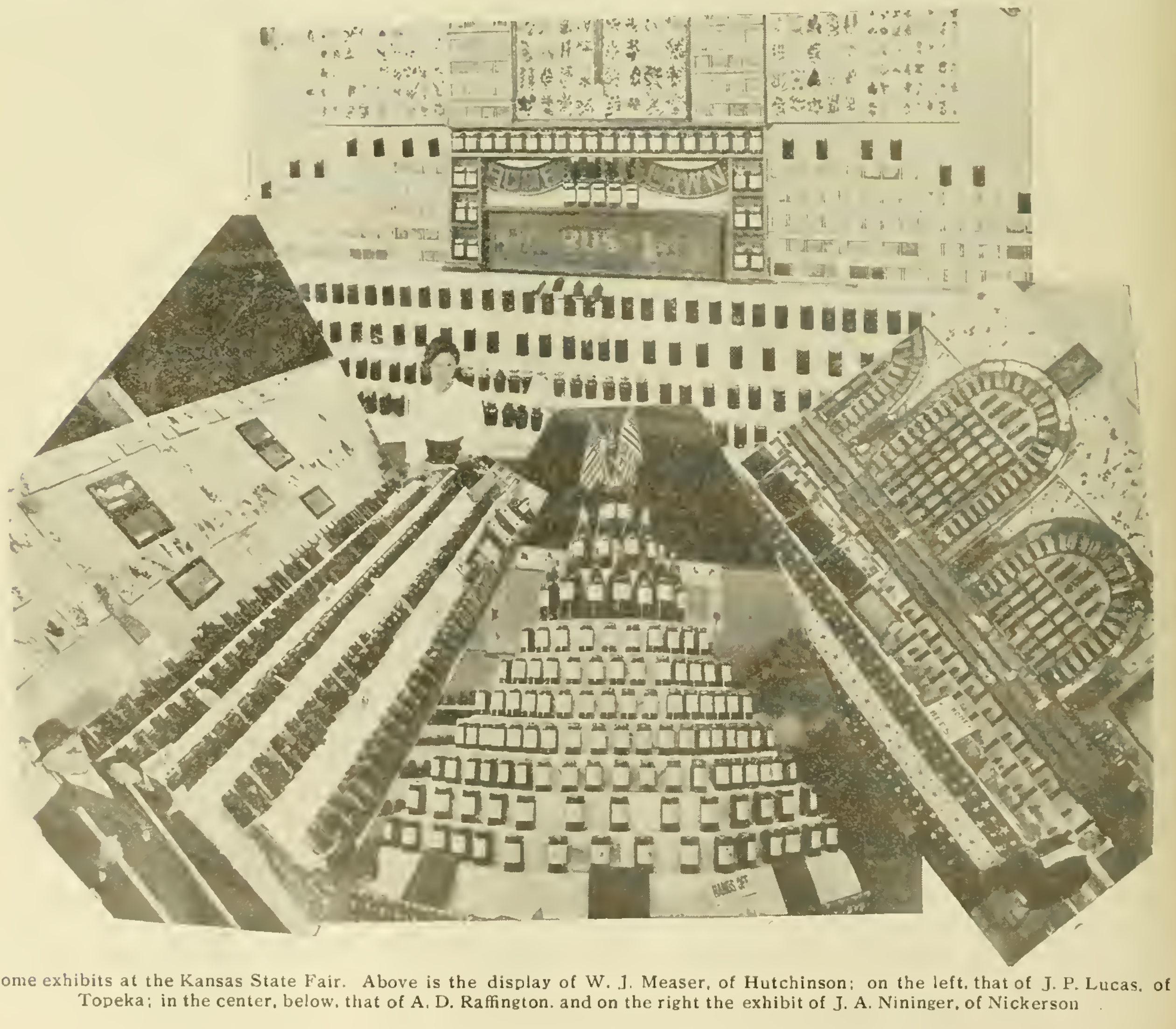
KANSAS STATE FAIR.

The Kansas State Fair at Hutchinson Sept. 16 to 23 was a success in every respect. Dr. G. Bohrer, of Chase, says it was one of the largest and best he has ever seen. The exhibit of honey occupied 1845 square feet of space. If there had been more space the beekeepers could have made a better showing.

Next year they hope to have a new bee building and have the Horticultural Society in the same building.

Ontario Meeting

The meeting of the Ontario Association, Dec. 12-14, at Toronto, was attended by about 200 beekeepers, a number of whom are large producers conducting outapiaries. The crop was good in 1916, and the meeting was therefore enthusiastic, especially as the honey has been sold at remunerative prices. The Ontario beekeepers have a committee on prices, whose duty it is to collect information from the members as to the amount of honey harvested and recommend a certain price for the crop. This season, althoug



Some exhibits at the Kansas State Fair. Above is the display of W. J. Measer, of Hutchinson; on the left, that of J. P. Lucas, of Topeka; in the center, below, that of A. D. Raffington, and on the right the exhibit of J. A. Nininger, of Nickerson the crop was large they recommended as high a price as last year, not without some misgivings. But the greater demand for honey, owing to better advertising and the higher prices of sweets in general, helped the sales and the crop is almost entirely gone, with a brisk demand in prospect for 1917.

Very interesting addresses were given by the president, Mr. Krouse, and Messrs. Armstrong, Webster, Chrysler, Sladen, Bisbee, Duff, Evans, Deadman, Bainard and others. On the evening of the second day, a banquet attended by nearly 100, was followed with an illustrated address by Wm. Couse, on the past presidents of the association. Mr. Couse outdid himself, by the lively interest he created, with anecdotes and interesting information concerning leading men of the past.

It would take more space than we can give to mention all the interesting points brought out during the three days of the convention. We will mention but a few.

Mr. Webster spoke of the Alexander idea of keeping nine or 10 queens laying, at one time, in one hive. He had tried this to his heart's content and considered it difficult to keep even two queens in one hive, separated by a queen excluder, during the honey crop. The old plan of nature of a single queen in each hive is still the rule, in spite of theories.

Mr. Bisbee indicated a method for finding a queen readily. The hive is raised from its bottom-board and placed over a cloth which has been painted with carbolic acid a day or two previously. A queen-excluder and a hive full of combs are placed over the colony. The bees and the queen ascend in the endeavor to escape the odor of the carbolic fumes and the queen is retained by the queen-excluder upon which she is found invariably in a very short time.

The purchase of pound packages of bees in early spring was discussed in a lively manner, especially after the arrival of Mr. Achord, of Alabama, who has had great experience in the shipping of bees. A criticism was made by several purchasers of the shortage of food given them by shippers, for long distance shipment. It appears that most of the losses in transit may be ascribed to this shortage. The recommendation was made to hive these bees on drawn combs and to avoid shaking them out in front of the hive, as in that case some of the bees get lost.

The association has a very active secretary, an excellent president and enthusiastic membership. Success is certain.

The meeting was held in the hall of the Hotel Carls-Rite. This was very satisfactory; the weather was stormy and the hotel accommodations were of the best and quite reasonable. We will long remember the comfort and pleasure of this meeting.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Fermented Honey

1. From two supers from one hive and one super from another hive I found here and there cells with the capping bulged up like a water blister, and when uncapped the contents were frothy. What was the probable *cause?* Not all frames nor all supers were affected.

2. As this is certainly fermentation, will such combs be fit for use next season?

It has been suggested to me that the trouble is due to honeydew, but I have not had any experience along that line.

NEW JERSEY.

ANSWERS.—1. That beats me. The only thing I can think of is some peculiarity of the honey—or honeydew—that favored fermentation; but why should it be only in scattered cells? You will have to look elsewhere for an answer.

2. The combs will be all right to use again, provided they be cleaned up by the bees this fall, as they should be in any case.

Transferring—When?—Feeding

1. In the Guernsey method of transferring is it necessary when the new frame hive is set on the old box-hive that the bottom of the frame hive be closed except where it fits over the box-hive, the latter being smaller than the box-hive?

2. When is the best time to do transferring in this section, southeastern Alabama?

3. Is it necessary to feed bees when you leave the comb-honey supers on for winter, the colony only being of moderate strength?

ALABAMA.

ANSWERS.—1. I have not now in mind full particulars of the Guernsey method, and you do not say where it is to be found, so I can answer only in general terms. It used to be considered quite important to have everything bee-tight, above and below, but now it is not so considered. Indeed, in England, where more transferring is done than here, it is quite the thing now to have it open between the lower and upper hive, so that the bees are in plain sight as they pass up into the new hive.

2. In fruit-bloom it is the time generally chosen, as at that time the combs are not heavy with honey, and bees are also in good condition to build comb and make the proper repairs.

3. Generally it will not be necessary; yet if there is not enough honey at the disposal of the bees, feeding is imperative.

How to Keep Down Swarming

I have 11 colonies of bees and wish your advice as to how to run them for honey and increase. Our honey flow does not commence here until about July 10; no flowers except some from fruit trees. Can I begin about May 10 and feed? Would the colonies swarm before July 10, or could I divide the colonies and make three colonies of each one? In either case how much should I feed? Bees do not swarm here until during the honey flow, and swarming cuts short the honey crop.

This year I had one colony swarm about May 15. What caused them to swarm so early? They made about 150 pounds of honey.

Perhaps you could suggest some better plan. Our honey comes from sweet clover, and if I can overcome the swarming problem my bees can easily store 150 pounds of honey each season. This year only three colonies swarmed. Why was this? The old and new swarms averaged over 150 pounds each, but other years they have not done so well as they swarmed during the honey flow.

WYOMING.

ANSWER.—You say if you can overcome the swarming problem you can get 150 pounds per colony. I have been trying for 50 years to find out how to overcome that problem, and many others have been working at it, and it's still a problem. However, I have done something toward it, and if you will study my book, "Fifty Years Among the Bees," I think you will find more on the subject than can be found elsewhere.

You ask why only three of your colonies swarmed this year. I don't know. If I had full particulars, maybe I could answer, and maybe I couldn't. Neither can I say why one colony this year swarmed as early as May 15, although very likely one reason was that it was extra strong.

Whether your scheme of feeding will work depends. If there is absolutely nothing yielding from May 10 to July 10, then feeding will do great good, and you will feed steadily just enough so that there shall never be much honey ahead in the brood-chamber, perhaps not more than five pounds. If, however, there is enough honey coming in so that the queen never stops laying up to the time of the harvest, then your feeding will do harm rather than good.

The Hive to Use for Outdoor

Which of the three different hives do you prefer for outdoor wintering: No. 1, outside measurements, scant 14 inches wide, 21½ inches long, and 12 deep. Quinby pattern hive, brood-frame 11 inches deep under top-bar. No. 2, 20 inches long, scant 13½ wide, 9½ inches deep, outside measurements. No. 3, 20¼ inches long, 9½ deep, and 16 inches wide, outside measurements. Nos. 2 and 3 use Langstroth frames. My father has been in the bee business for over 50 years, and has always used Quinby hives with a dummy on each side, and has run for comb honey. He has always wintered in a bee-cellar under the house. We have 100 colonies at this time, and I am thinking of starting an out-yard next year. I want to make the hive most satisfactory for wintering outdoors with good outside cases. NEW YORK.

ANSWER.—I should expect a little better wintering in the first hive mentioned, with its deeper frame and more nearly spherical shape.

Kind of Bees—Swarms—Requeening—Transferring

1. I am sending a sample of bees I have in my apiary. Kindly tell me what kind they are.

2. What causes bees to start to work at the bottom of a super instead of at the top.

3. When my bees swarmed out this year the swarms were small. What was the reason?

4. What causes a swarm of bees to go away without alighting?

5. In introducing a queen to a colony what causes the bees to kill her and rear one of their own?

6. I have a swarm of bees in a box-hive which I would like to put in a movable-frame hive. Could I take the bottom-board off of the box-hive and put it on top of a new hive with full sheets of foundation just like a super? Will the bees be likely to go down and work in the new hive and stay there when they get their old hive full?

7. What causes a colony to get queenless?

8. I didn't get all my requeening done this fall. If I put in new queens in May will that prevent them from swarming?

9. I was feeding a colony about four pounds of honey this fall for about four days. Will they start brood-rearing?

MINNESOTA.

ANSWERS.—1. I have some doubt whether the man is yet born who can take three or four dried-up dead bees and tell what kind they are. Certainly I can't. Alive, they might or might not be told; death makes the case harder still. The specimens sent may be blacks, and they may be something else.

2. One reason may be that the super is too high for the number of bees there are to fill it, especially if there be nothing to bait the bees above. I have known a strong colony to begin building up from the top-bars when an empty hive-body was placed over it.

3. Like enough because they were afterswarms. When a colony throws off four or more afterswarms, the last of them may be no larger than your fist.

4. It is a very rare thing that a prime swarm goes off without alighting; indeed some claim that they never do. An afterswarm may go off without settling, possibly because its queen is a virgin, and in lighter trim for flying.

5. Probably because she is a stranger to them and they don't want any interlopers.

6. Yes.

7. Often a bungling beekeeper; and sometimes a virgin is lost on her wedding flight with nothing in the hive from which to rear another queen.

8. Like enough, provided the new queen be one just reared.

9. Not very likely, if the queen had stopped laying.

Pickled Brood

During the month of July I noticed in my apiary one colony of bees that was full of dead brood; worker and drone brood alike were affected with the same disease. Combs were full of brood, some dead in cells after capping, but most of the brood had died before being capped, and quite a few dried down and dark in color.

I sent a sample in size of about 2x3 inches to Washington, D. C. After two weeks I received a letter from there stating that the trouble was perhaps pickled brood, and no treatment was necessary; but still a positive diagnosis of the case could not be made from the sample I had sent. Later on I found a couple of colonies that were also slightly affected with the same disease.

This fall I noticed that the bees had cleaned out, or nearly all, the dead brood, excepting about two to four capped cells to each side of the brood-comb. The cappings are normal.

This colony was boiling over with bees all summer, but did not swarm.

How could I prevent this malady from spreading?

Is there any known cure for it?

Would you advise destroying the brood-comb and super comb of the sick colonies?

Would it be advisable to place this colony some distance, say about 50 to a 100 feet from the main apiary next spring, if they live that long? WISCONSIN.

ANSWER.—If it is pickled brood there is no need to do anything beyond doing all you can to keep colonies strong and in good condition; it should disappear without spreading, and it is not advisable to destroy combs or to move colonies 100 feet away.

Swarm Prevention

1. Can you give me the best way to prevent swarms? I confess that I hardly understand your methods of swarm prevention by dividing as mentioned in "Fifty Years Among the Bees."

2. Do you lift your hive with ¾-inch blocks where you use 2-inch entrances?

3. If I don't want to divide, I would like to cage the queen and leave her in the brood-chamber on the bottom-board for ten days; if queen-cells appear I destroy all of them, and again in five days I destroy them and later free the queen. Is this a good way?

4. Some writer said if a queen is left in the cage ten days it would cause foulbrood or some other disease. What do you think about it? INDIANA.

ANSWERS.—1. I am very sorry that the matter is not made entirely clear to you in the book "Fifty Years Among the Bees.' I do not believe I can give you anything better here, but if you will tell me the part that is not clear to you I shall be only too glad to give any further explanation I can.

2. No; with a bottom-board and entrance two inches deep, and a bottom-rack to prevent the bees building down, I do not raise the hive on blocks. I think, however, that the additional blocking-up would be a further help against swarming, although a good bit of trouble.

3. This plan was given by G. M. Doolittle many years ago, only he used it *after* a colony had swarmed instead of before. I used it for some years with success, and always felt thankful to Mr. Doolittle for the plan.

4. I think it's nonsense.

KEEP IN A WARM DRY PLACE
PURE HONEY
BLUE RIBBON BRAND
NOT LESS THAN 11 OZ.,
COYNE BROTHERS
CHICAGO
HONEY

SPECIAL BRANDS HAVE HELPED INCREASE DEMANDS FOR HONEY

Beekeeping Near Seattle

1. With honey retailing here at Tacoma and Seattle at 15 cents per pound section, and 25 cents per pint extracted, would it not be more profitable to extract?

2. How much comb honey should I be producing before it is profitable to purchase an extractor (or how many colonies)?

3. What is the relative weight between honey comb and its contents, and how much more honey is it generally considered can be produced by extracting?

4. Last winter was the worst in years for this section, nearly a month of snow and below freezing weather. Usually we only have a week or ten days hard freeze with a few scattering frosts with lots of rain. Would it be best for me to winter in a cellar? I have single-walled hives and reduce the entrance to one-third. WASHINGTON.

ANSWERS.—1. Yes, decidedly.

2. If you intend to give up bees at the end of next season, it might not be worth while to get an extractor unless you have eight or ten colonies. But if you intend to continue, increasing your apiary, I should say it would be better to get an extractor if you have only two or three colonies.

3. According to Root's "A B C and X Y Z of Bee Culture," a section weighing a pound will have a little more than one-half ounce of wax. Arthur C. Miller says 100 pounds of chunk honey built without foundation will yield almost exactly three pounds of wax. It is generally estimated that bees will produce 50 percent more extracted honey than comb. Some put it as high as double.

4. My guess would be that outdoor wintering should be the better, but I'd rather take the experience of beekeepers on the spot.

Location

If you were to start beekeeping again what State would you choose? SOUTH DAKOTA.

ANSWER.—The likelihood is that if I were beginning over again I would begin in whatever State I happened to be living in. There are other things beside bee-pasturage, not the least being the ties that bind one to the old locality. I happen to be in a place that is none of the best for bees, and I have a good many times thought that if I were beginning over again I'd choose a better location, and yet as I grow older I don't feel so sure about it. I have noticed a number of cases in which men have moved hundreds of miles to better their locations, yet in a very few years many of them would be found back in the old home. On the whole, it would be rather a bad thing if some one location should be decided the best in the world, and all beekeepers should at once decide that was the best place for them.

A Beginner

1. I intend to run for comb honey; which would you advise 8 or 10 frame hives?

2. If I buy a couple of spring swarms (next spring) will they give a fair yield next summer or must I buy colonies that have been wintered to get a good yield of honey? MASSACHUSETTS.

ANSWERS.—1. The likelihood is that the

10-frame is safer for you. However, if you use the same frame in each, it will be easy for you to try both kinds before you fully settle the question.

2. A strong swarm that issues when bees first begin to swarm should give you a fair yield of honey; yet if there is not too much difference in price you will be better off with a colony that has wintered over. It would give you increase and honey, while the swarm would give you only honey.

Queen Excluder—Section Folder—American Foul-Brood

1. Which is the best queen excluder?

2. Is there a better and quicker section folder than the Friedman Greiner?

3. I saw a statement that about 100 percent more comb honey is stored, when combs are already built, as when bees have to build them.

4. How is the Hassinger way, in the American Bee Journal for 1916, pages 164 and 166, and are the beeswax scales better for comb honey, or is it likely to be all drone-comb?

5. Can American foulbrood be cured by a healthy queen and a healthy 20-days old brood, taking away the sick colonies at noon and putting the queen above a wire-screen for a day with the healthy brood, then letting them unite the second day. This would save the shaking plan. Put the diseased colony over another diseased colony by the N. E. France plan. There is less work, no loss in bees, honey, comb or beeswax. I have not fully tried the hospital plan, but think it will work. CALIFORNIA.

ANSWERS.—1. I have had no experience with the wire excluders; but being smooth they may be better than excluders of perforated zinc, provided they are perfect in construction.

2. So many different section folders have been offered that I cannot say.

3. While some claim that bees will store 100 percent more in drawn combs than in foundation, not more than 50 percent is generally claimed. Much depends upon circumstances; in some cases, in a very poor flow, and with a weak colony, the gain might be more than 100 percent, for the bees might store a little in drawn combs and nothing at all with only foundation.

4. I know nothing about the matter except from reading the article to which you refer. In that Mr. Hassinger seems to have a good knowledge of his subject.

5. Your plan contemplates saving combs in which American foulbrood has been. I don't believe such combs would be safe, although with European foulbrood they might be.

REPORTS AND EXPERIENCES

Fair Average in Spite of Drouth

In spite of the dry weather continuing through July, August and September, the season of 1916 was very favorable for beekeepers in Shawnee and surrounding counties.

My 17 colonies increased to 27, and surplus averaged 65 pounds, all comb honey. We have no trouble in disposing of our crop at fair prices. People will always buy clover honey for its color and mild flavor.

Topeka, Kan., Nov. 20. A. R. SMITH.

Many Bees in One Yard

I have just finished the season which nets me 754 24 section cases of comb honey besides over 4000 pounds of extracted. 280 colonies produced this in one yard, or about 75 pounds average per colony.

Delmar, Iowa. FRANK COVERDALE.

Honey Sold Out

My honey is all sold at the present time at 10 cents per pound for extracted and 15 cents for comb. The summer crop was three-fourths and the fall flow one-fourth.

Bunceton, Minn. J. R. MARYE.

Honey All Sold

I won first premium on basswood extracted honey and second on granulated basswood honey at the Minnesota State Fair this fall. Four inches of snow came today. Bees are in fair shape for winter. I have sold all of my honey already, fifty 60-pound cans at $6 25 per can. FAYETTE LEE.

Cokato, Minn., Oct. 20.

A Good Average

Here is our report for 1916: Twenty colonies, spring count, increased to 36. Took off 1000 pounds of comb honey and 2000 pounds of extracted honey. Quality was never better. EDWARD BLACKSTONE.

Drouth Interfered

Last year I started with one colony of bees and increased to two. I wintered the two colonies in the cellar and both lived. Now I have six colonies. They have a good supply of stores at present in the hives. A new kind of bee which the bees killed in the hive is black with a long body and wings, also long legs.

There is plenty of alsike and white clover around here, which yielded fine until dry weather came.

We had no rain here from about June 20 until the corn was in roasting ears, then we had so much rain that the corn is not very good and lots of it is soft.

LEWIS CLEAVELAND.

Wilmont, Minn., Oct. 20.

Commercial Beekeeping

Not alone from personal experience, but also from observation, do I believe in commercial beekeeping. It pays not only financially, but in many other ways as well, for I do not know of a happier or more contented people than the beekeepers. That which is said of men in other walks of life may be said of the beekeeper, "They are born, not made."

If one is to make a success of beekeeping his greatest essential need is to take a natural interest in the bee, and its ability to look after the details of the business. When but a boy I wondered how men could keep so many bees and look after them. I afterwards found that one must have a system and work the system. Oftentimes people will ask how I can keep and manage 75 or 80 colonies with all my other work? The only way I can answer is to say I plan my work during the winter so that when the busy season is on it is easy to do the necessary work with the colonies. I find one of the greatest essentials is being on the lookout for the detail work in the apiary. Doing that which is necessary on each visit; not putting off until a more convenient time.

If one intends making a business of beekeeping one needs a good location. Bees are more profitable where there is plenty of fruit; also near some stream, where there are plenty of linden trees, buckbrush, autumn flowers, and white clover.

Mr. Pellett, of Atlantic, Iowa, in his third annual inspection report on page 15 says: "The few millions the bees add to Iowa's product yearly, is a net addition to her wealth. The presence of large numbers of bees also greatly increases the production of fruits and seeds of many kinds by better cross pollination of the blossoms, so that but a small a part of the revenue derived from the bees is represented in the direct product of honey and wax."

The most important factor in commercial beekeeping is the equipment for the apiary. The beekeeper should have a scientific knowledge of the diseases of bees so that he is able to detect trouble at once.

"Knowledge is power," and it is the beekeeper who is informed that is capable of detecting and caring for diseased colonies who can make a success of the bee-industry. Only the pure races of bees are best. There has been quite a little discussion on this subject in the bee journal's. From my own experience I find that breeding queens from my own yard pays. I prefer either the golden or the leather-colored Italians because they are more gentle, more prolific and better disease resisters than other races which I have had in my yards. He should use the hive with movable frames. I use the 10-frame Langstroth in my yards and find that style best adapted for my use for both extracted and comb honey.

It is reported that in the United States the number of beekeepers is becoming less, but the number of bees is not decreasing accordingly, which proves that there are more people who are specializing in beekeeping than ever before. J. W. STINE.

Stockport, Iowa

Flood in August

I am sending you a photograph of the flood we had in August. The water was in my bee-yard, and it would have caught my bees again but the water did not come as badly as last year, and that made it safe this time.

The bees did fairly well this season. The fall flow was not as good I started with 12 colonies, spring count, and increased to 34. I produced 700 pounds of comb honey. Bees are all strong and healthy and have enough stores for winter. LOUIS WERNER.

Edwardsville, Ill., Oct. 17.

Hunting Bee Trees

I have done more or less hunting of bees in the woods for the past 15 years.

First, we must understand that when bees leave for a new home and go to the woods

Distant view of an apiary during flood times in 1916. Apiary of Louis Werner they invariably try to locate their new home along a creek or where water is easily reached. In the fall flowers are all gone so they have nothing to work on. I generally look along places that I would consider a good watering place, and if successful in finding a bee I catch her, put her in the bait box which I provide myself with, having filled the old comb-cells with diluted honey or syrup made of granulated sugar. Don't make the syrup too thick, as it takes the bees too long to load up and too long to unload. Also provide yourself with some old comb, and in case you cannot find bees in any other way burn some old comb, and if you are near bees they will smell the comb burning and will come to it.

The bait box I use is about 6 inches wide, 6 deep, and 8 long, with a slide top or cover, and a strip of glass in the top of the cover. As soon as you can see the bee filling herself with the bait, gently slide the cover open, and when she is filled up she will come out of the box and circle around, close at first, and will keep working farther away, and then make three or four large circles and finally dart in a straight line for home.

Get the line and you will soon have a box full, and as soon as you have lots of bees working follow up the line, moving your box as you go a short distance at a time. I have timed bees many times when leaving the bait box for home, and where they go about one mile it invariably takes them about 15 minutes to go home, unload and get back.

When they lead you in a thick clump of timber and you have trouble in locating the tree, and you are not sure but what they passed through the timber, move your bait box to the opposite side, after shutting the cover with a lot of bees in the box. Then let them out, and if they still make for the thick clump of timber, you can come to the conclusion they are in there somewhere. Sometimes you will find them in a tree or log that is lying down, and sometimes they enter a standing tree down at the roots, which is sometimes difficult to locate. Two weeks ago I helped take the bees and honey out of a down hemlock, and we got more than 100 pounds of honey and saved the bees and queen, brought them home, set them to keeping house, pinched the queen which was black, and gave them a nice Italian queen in place of the black one. They were as gentle as the most gentle Italian bees I ever saw. JOHN A. STEVENS.

Mio, Mich., Nov. 16.

The National at Madison.—The annual meeting of the National Beekeepers' Association will be held at Madison, Wis., on Feb. 6, 7 and 8. All beekeepers who can possibly do so are urged to attend. It is hoped to develop plans at this meeting which will be a distinct aid to all members and all other beekeepers.

◆

North Carolina Meeting.—A meeting of the beekeepers of North Carolina will be held in Board of Trade Hall, Board of Trade Building, Winston-Salem, on Thursday afternoon and evening, Jan. 11, 1917.

This meeting will be in cooperation with the extension work lately started in the State, and every beekeeper in the State should make their best endeavor to be present and help boost the good work along. It is expected that a State organization will be effected at that time.

Dr. E. F. Phillips will give an illustrated lecture and Mr. E. R. Root is expected to fill a large place on the program.

Several live papers will be presented by local beekeepers. The North Carolina Live Stock Show will be on in Winston-Salem at that time, and many beekeepers will have a double reason for attending.

All beekeepers whose names are listed in the department's records at Raleigh, will receive a circular of the meeting. If your name is not now on the department's mailing list, please write at once to one of the following, giving your name and address, number of colonies kept and kind of hives.

FRANK SHERMAN, JR., *Entomologist.*
GEORGE H. REA, *Specialist in Beekeeping.*

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

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THREE-BANDED ITALIAN bees and queens Send for our 1917 calendar—it's free.
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1Atf 84 Cortland St., New York City.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens, $1.00; 6, $5.00. My circular gives best methods of introducing, A. V. Small,
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FOR SALE—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.
Union Springs, Ala.

A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need, Only 15 cents per line each insertion.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

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T. W. Burleson, Waxahachie, Tex.

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M. F. Perry, Bradentown, Fla.

GRAY CAUCASIANS, exceptionally vigorous and a long lived race of bees; are known as the most gentle of all bees. Free circular and price list. Orders booked now for spring delivery. F. L. Barber, Lowville, N. Y.

FOR SALE—Apiary of bees at Tularosa, N. Mex.; up-to-date appliances, good bees, good bee location, and fine climate to live in. Selling because of death of late owner, J. A. DeWitt. N. B. DeWitt,
Care El Paso & S. W. Ry., Douglas, Ariz.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

TELL several thousand people what you have for sale with a few words in this department.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00: Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

GOLDEN ITALINAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25: 12, $8.00; 100, $[illegible]0. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L J. Dunn, 50 Broadway Ave., San Jose, Cal.

QUEENS, Doolittle and Moore strain, also GOLDENS that are GOLDEN. One select unt. $1 00; 6, $4.25; 12, $8 00. Tested, $1 25.

Bees by the pound a specialty. One 1-lb. package, $1.25; one 2 lb., $2 25; large lots less, also nuclei and colonies. Ready March 15th. Booking orders now. Circular free.
J. E. Wing, 155 Schiele Ave , San Jose, Calif.

BEES WANTED—Wanted to buy bees within shipping distance of Atlantic, Iowa. Would prefer to buy f. o b. Atlantic, in ten-frame hives. Give full information concerning hives, bees, frames, etc., together with price in first letter. Would consider any number from fifty colonies up to carlot.
Frank C. Pellett, Atlantic, Iowa.

HONEY AND BEESWAX

WANTED—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

MUST have extracted honey at once. Write to E. Strubel,
1302 Louise Ave., Milwaukee, Wis.

WANTED—Small lots of honey for bakers' use. C. W. Finch,
1451 Ogden Ave. Chicago, Ill.

NO. 1 white comb, $3.50 per case; No. 2, $3 00. No. 1 fall comb. $3.00; No. 2, $2 50; 24 sections to case. H. G. Quirin, Bellevue, O.

WANTED — Extracted alfalfa honey and wax. Send sample of honey, price, etc.
A. E. Burdick, Sunnyside, Wash.

WANTED — White extracted honey also light amber in any quantity. Send sample and lowest cash price.
E. B Rosa, Monroe, Wis.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Well ripened white extracted honey, preferably alfalfa and sweet clover or white clover Send sample and price to The Colorado Honey Producers' Association
1424 Market St., Denver, Colo.

WANTED—Extracted honey in both light and amber grades. Kindly send sample, tell how your honey is put up, and quote your lowest cash price, f. o. b. Preston.
M. V. Facey, Preston, Minn.

FOR SALE—65 cols. Italian bees $4 00 per col.; 10 cols. hybrids, $3 50 per col. All from J. T. Moore's strain, and in 8-frame hive bodies in winter cases; standard full depth self-spacing Hoffman frames, 8 to each hive, all combs straight; cols. strong and healthy with stores for winter; would bunch the lot for $3 25 per col.; a few untested Italian queens, 60c each. Wilmer Clarke,
Earlville, Mad. Co., N. Y.

I NEED a large supply of extracted honey, must be white clover or its equal. 60-pound packages preferred. Quote your lowest cash price f. o. b. here. Send sample if you are interested. F. Bender,
221 Pub. Square, Nashville, Tenn.

FOR SALE—Our own crop of extracted white clover honey in barrels or cans. This is as fine quality white clover as we have ever seen. Write for prices and state quantity wanted. Dadant & Sons, Hamilton, Ill.

HONEY WANTED—We are in the market for light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

SUPPLIES.

WANTED—Cheap honey extractor in good order. J. D. Sherwood, Ft. Madison, Iowa.

THE PERFECT Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

WANTED—Small extractor in good condition. G. N. Larson, Altona, Ill.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

FOR SALE—One Detroit Kerosene Engine 6 hp., used but little, as good as new. Will sell for $75; cost $95 new.
The M. C. Silsbee Co., Rt. 3, Cohocton, N. Y.

GOOD second-hand 60-lb. cans, 2 cans to the case, 30c per case, in lots of 10 cases or less. In lots of 25 cases or more, 25c per case. These prices are f. o. b. Cincinnati.
C. H. W. Weber & Co.,
2146-48 Central Ave., Cincinnati, Ohio.

WANTED—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address,
American Bee Journal, Hamilton, Ill.

FOR SALE—800 new metal spaced brood-frames, No. 2 stock, nailed and wired, at $3.00 per hundred or 400 for $11. Also 100 loose hanging brood-frames nailed, No. 2 stock, at $2.50. The M. C. Silsbee Co.,
Rt. 3, Cohocton, N. Y.

SITUATIONS.

WANTED—Beekeeper familiar with Rocky Mountain conditions to handle bees on shares. Can make good offer. Write stating age, experience, etc.
A. H. Dunn, Fort Collins, Colo.

WANTED—Single man for season of 1917, with knowledge of orchard work and beekeeping preferred. State age, experience and wages in first letter.
Baxter Bros., Leavenworth, Kan.

WANTED—A position in a large apiary. Understand both comb and extracted honey productions, and can assist in queen rearing, as I understand the business. Would prefer position in the southern States. Address,
J. R., Care of American Bee Journal,
Hamilton, Ill.

WANTED—Position by expert in tropical apiculture. Will go to any part of the world, but prefer an English speaking country.
Address, Tropical Apiarist,
Care Dadant & Sons, Hamilton, Ill.

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FOR SALE or trade, hotel in live Minnesota town. Will exchange for land or bees or both. Romen Grebin, Preston, Minn.

THE FIRST OFFER of $8.00 takes my 22 calibre center fire single shot Winchester rifle, like new, cost $14. Cartridge similar to 25-20. Address, John J. Ellers, Rt. 3, Winona, Minn.

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Another card gives cuts showing relative food value of honey and other products. These cards are the same size as the above, and in two colors. Just the thing to place in stores to push sales of honey. Prices 5c each; six for 25c. Postpaid.

American Bee Journal, Hamilton, Ill.

"ROUGH ON RATS" ends **RATS, MICE,** Bugs. Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. **Economy Sizes 25c. 50c.** Small 15c. Used the World Over. Used by U. S. Gov't. **Rough on Rats Never Fails.** *Refuse ALL Substitutes.*

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American Bee Journal, Hamilton, Illinois

HONEY AND BEESWAX

CHICAGO, Dec. 18.—Comb honey continues to drag. One hundred pounds of extracted to 10 pounds of comb is about the average in sales during the past month. So active is the demand in extracted that the price has advanced on all grades 1c or about per pound. The best grades of white clover are now commanding 10c per pound, and it looks as though all of it was going to go into consumption before the coming of another crop. Various reasons have been assigned for the unusual consumption of extracted *vs.* comb. One we frequently hear is that it is taking the place of butter and preserves as children are now getting honey on their bread instead of jam.

Beeswax sells at from 28@30c per pound for the ordinary grades, and if free from sediment and bright in color, 32c per pound.
R. A. BURNETT & CO.

KANSAS CITY, MO., Dec. 18.—The honey market is slow, about $2 85 being the top price for fancy white comb honey down to $2.50 for No. 2. On account of the raise in the local freight rates, the consumption of honey has been curtailed considerably, but we understand that the railroads will adjust these rates after the first of the year and we believe there will then be a better demand for comb honey. Extracted is firm at 7½@9c a pound, and No. 1 beeswax is selling at 25c a pound.
C. C. CLEMONS PRODUCE COMPANY.

CHICAGO Dec. 19.—The honey market is very quiet and we are very much surprised for the reason that it is the cheapest commodity on the market. We have over two carloads of comb honey on hand. We have already sold three carloads up to date, but it looks as though we are going to have a better demand after the first of the year. We are selling 24 section cases for $2 75 to $3.00, extra heavy weights glass fronts $3.25. Extracted honey is in light supply and the demand is very active, selling 9@10c.

Beeswax ranges from 27@32c, according to quality and brightness. We are advertising the honey liberally in the different ways in order to create a bigger demand. Let us all work as best we can. D. J. COYNE.

DENVER, Colo., Dec. 18.—The demand for comb honey in carload lots is light, but we have never seen such an active demand for extracted as of late, as there is practically no stock left in the producers' hands throughout the Rocky Mountain region. Comb honey, fancy, $2.84; No. 1, $2.70; No. 2, $2.57. Extracted honey, white, per pound, 9@9½c; light amber in cans, 8½@9c. Beeswax, we buy and pay for clean, average yellow beeswax, per pound 28c in cash and 30c in trade.

As our business in honey is principally to jobbers we quote jobbing prices.
THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

SAN ANTONIO, Dec. 15.—Stocks of honey are pretty well cleaned up. There is no bulk comb left in the hands of producers. Extracted in limited quantities is bringing 8@9c. Beeswax prices are 27c cash and 30c exchange SOUTHWESTERN BEE CO.

NOTICE TO SUBSCRIBERS

We are obliged to cancel many of our prices of combinations of the American Bee Journal with bee books. Those desiring to take advantage of the combination offers will please disregard former offers and order per the followng list, which gives postpaid prices for the United States. For Canada add 10 cents for yearly subscriptions and for foreign countries add 25 cents:

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Doolittle's Scientific Queen Rearing	.50	1.25
Bee Primer	.15	1.00
Original Langstroth (reprint)	1.00	1.75
Productive Beekeeping	1.50	2.25
Beekeeping (Phillips)	2.00	2.50
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Dr. Miller's "Fifty Years"	1.00	1.75
Advanced Bee Culture	1.00	1.75
How to Keep Bees	1.00	1.75

AMERICAN BEE JOURNAL, Hamilton, Ill.

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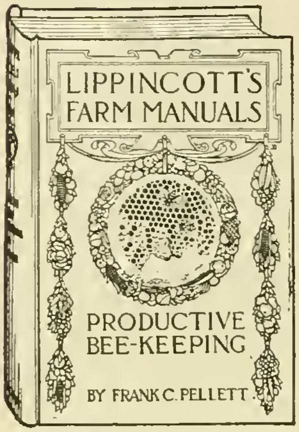

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American Bee Journal, Hamilton, Illinois

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F. M. ALEXANDER
Atlantic, Iowa

The Beekeepers' Review Announcement for 1917

Mr. Floyd Markham now holds the gold medal, being offered by the Michigan State Beekeepers' Assocation for the best honey produced in the State. This medal has now been won for the second time by Mr. Markham at our last convention. Mr. Markham also won all the first prizes on both comb and extracted honey at the Michigan State Fair at Detroit this year. Mr. Markham is without a doubt the World's champion comb honey producer. How much would it be worth to you, Mr. Comb Honey Producer, to call at Ypsilanti and ask Mr. Markham all about how he produces so much better comb honey than the average beekeeper? It would likely be worth a hundred dollars to you during the few years to come; the information you would get on such a visit. You can get it all for a dollar by subscribing for The Review for 1917, for Mr. Markham will write twelve articles for the twelve numbers of The Review during 1917, telling the entire procedure of securing the exhibition honey. None who aspire to greater things in beedom should fail to read how Mr. Markham accomplishes such results.

Mr. J. E. Crane is no stranger to the beekeeping fraternity. He has written much at different times relative to his method of beekeeping. We consider ourselves fortunate in securing Mr. Crane to write twelve articles for The Review for the year 1917, covering the entire season with the bees. Mr. Crane's 40 years among the bees, as he will write it up for The Review will be mighty interesting reading in a book it would readily sell for a dollar. You will get this interesting series, including many other features by subscribing for The Review for 1917.

E. D. Townsend, now owner of The Beekeepers' Review, used to produce comb honey on quite a large scale. He originated the system now known as "producing both comb and extracted honey in the same super." This system if properly carried out is one of the very best systems of comb-honey production that has been brought to light. The Editor of The Review has run large apiaries on this system of producing comb honey WITH ONLY 12% OF THE COLONIES IN THE ENTIRE APIARY SWARMING. An ideal system for outyard work for comb honey. The Editor of The Review will write up this entire system of producing both comb and extracted honey in the same super for the pages of The Review for 1917. This series of articles alone ought to be worth many times the cost of The Review for a year.

Space forbids us mentioning other valuable contributions that will appear in The Review for 1917.

We will mention at this time that we are making arrangements with several of our very best honey producers to furnish us material for The Review written FROM ACTUAL EXPERIENCE of several years standing. We will mention just one more of our 1917 correspondents who has 400 colonies of bees. He works the entire 400 colonies for extracted honey alone, in about 100 days, doing the work alone and securing very favorable crops. This party also sells his honey all in his home market at a price much above what is usually secured by producers. There will be many more valuable articles in The Review for 1917, including all the valuable papers read at the National Convention at Madison, Wis., next February. We hope there will be none of the readers of the American Bee Journal so short sighted as to miss sending in his dollar for The Review for 1917. Address,

THE BEEKEEPERS' REVIEW, Northstar, Mich.

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Be sure, however, to get the biennial variety as quoted above.

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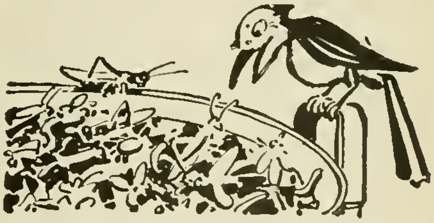

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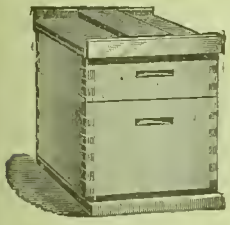

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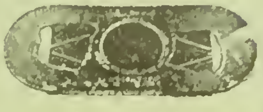

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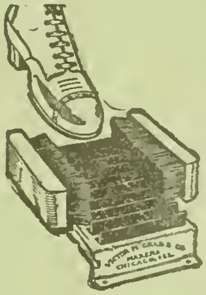

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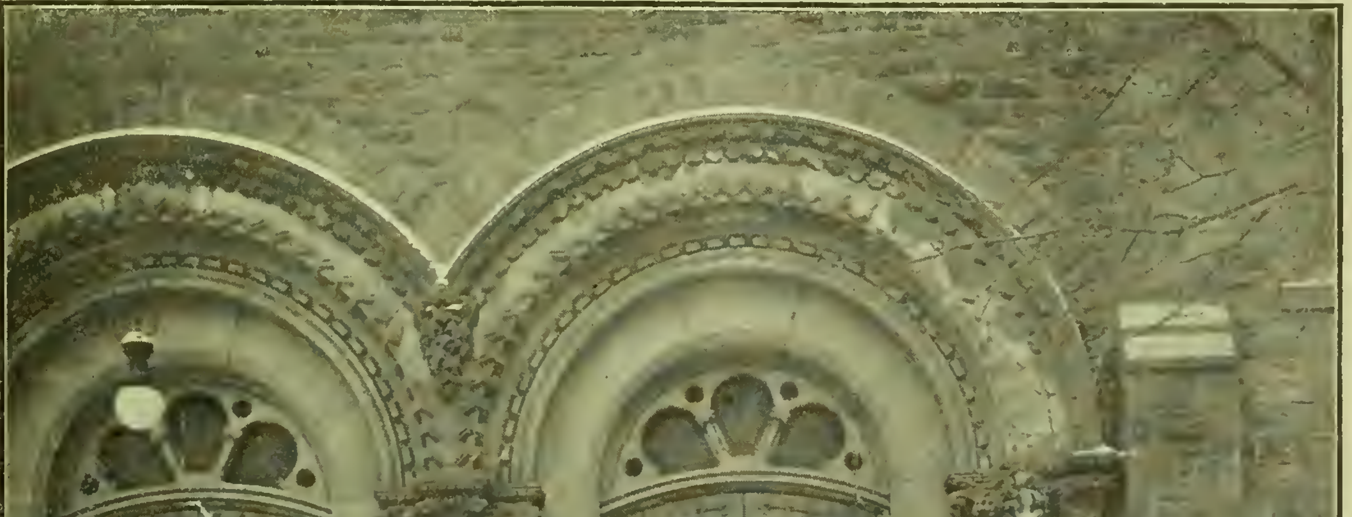
AMERICAN BEE JOURNAL

FEBRUARY, 1917



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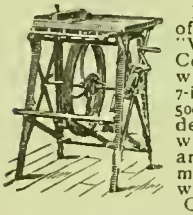

Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

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American Bee Journal, Hamilton, Illinois

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Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4 50	8.00	16.00
Warranted	1.10	5 50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

Our Reference—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

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Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed

PRICES

	1 lb.	10 lbs.	30 lbs	100 lbs	Per bu 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	15c	$1 35	$3 50	$11.00		$ 3.30	$ 3 20	25 to 30
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Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	15c	1.25	3 50	11.00	6.75	6.50	6.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you Samples on application.

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Double-wall with air spaces, insulation or packing as you may prefer. Over an inch of space between the outer and inner walls. Total wall space two and a quarter inches. If you have ever had occasion to spend any time in a building, single boarded, during cold weather, you can appreciate the advantages of double walls. Even with a red hot stove, you are freezing on one side and roasting on the other. Double walls relieve this condition and reduce the quantity of fuel necessary. Honey is the fuel, the bee the stove. The life of the bee as well as the stove depends upon its work; do not burn them out. Send us a list of your requirements for 1917, and let us figure with you. Small as well as large orders are wanted. Let us add you to our list of many pleased customers in all parts of the country.

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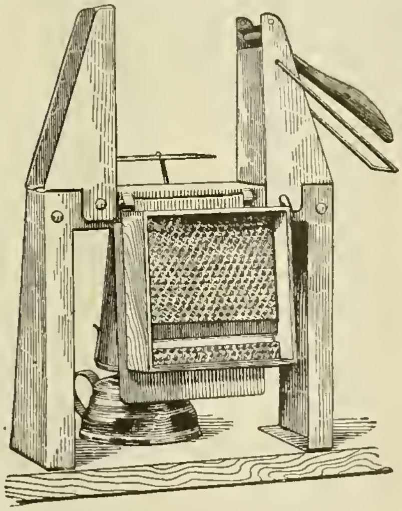

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

H. W. Schultz, of Middleton, Mich., in writing us says: "Your Section Fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp $2.75. Shipping weight 5 lbs. Postage extra. Send for special circular, fully describing this machine.

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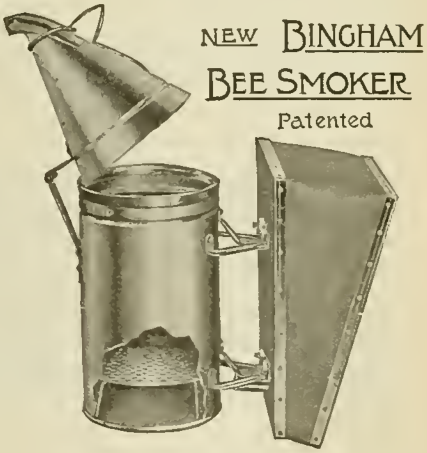

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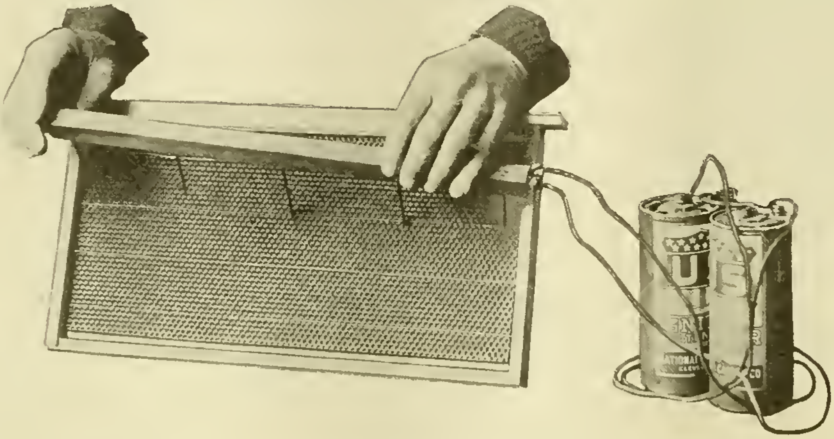

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Price without batteries. Mailing weight 1 pound	**$1.00**	**Price with batteries Mailing weight 6 pounds**	**$1.80**

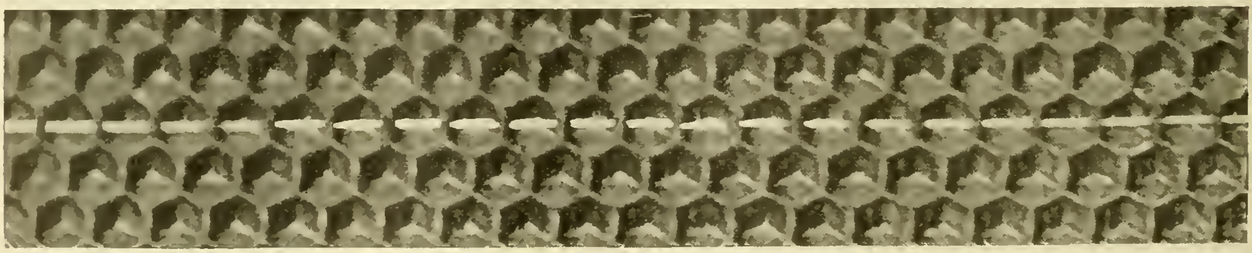
SIMPLE TO OPERATE—All that is necessary is to connect device to two dry cells and go ahead.

ECONOMICAL—Two dry cells will imbed a thousand or more brood-frames with four wires. Can be left connected and will not burn the current except when in actual use. Saves its cost in a short time.

DURABLE—Made of wood, copper and brass, and will last a lifetime.

CONVENIENT—Can be used where city current is not available. This makes it especially valuable for the outyard or for the farmer beekeeper.

EFFECTIVE—Far ahead of any other device on the market. Cements the wire in the foundation as though it had grown there. The slight pressure on the wires is just enough to push the hot wire into the cell walls.



This cut shows how well the wires are cemented into the foundation. When wired in this way foundation may be kept in the frames indefinitely without danger of becoming loosened. Send in your order today. Ask for our 1917 catalog. We list several new items which will interest you.

DADANT & SONS, Hamilton, Illinois

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Shipping Cases In Flat, Without Glass

No.		10	100
1	holding 24 sections, 4¼x1⅞, showing 4	2 00	18 00
3	holding 12 sections, 4¼x1⅞, showing 3	1 30	11 00
1½	holding 24 sections, 4¼x1½, showing 4	1 90	17 00
6	holding 24 sections, 3⅝x5x1½, showing 4	1 80	16 00
8	holding 24 sections, 4x5x1⅜, showing 4	1 80	16 00

Shipping Cases, With Glass

Number and description	Nld	In flat, with 3 in glass			With 2 In. glass
		1	10	100	100
11 Same as No. 1	35	25	$2 20	21 00	20 00
13 Same as No. 3	.22	.15	1 40	12 50	12 00
11½ Same as No. 1½	.35	25	2 20	20 00	19 00
16 Same as No. 6	.30	.22	2 10	19 00	....
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W. T. Falconer Mfg. Co., Falconer, New York

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—— FOR ——

JOHN M. DAVIS

1917 Queen Prices

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Dept. S., Kansas City, Missouri

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 2 HAMILTON, ILL., FEBRUARY, 1917, MONTHLY, $1.00 A YEAR

COMMERCIAL QUEEN REARING

Methods of Wholesale Production of Queens at the Davis Apiaries as Seen by Our Staff Correspondent

BEEKEEPING is getting more highly specialized every year. Where formerly the beekeeper produced both comb and extracted honey for market and also reared his own queens and a few to sell, the beekeeper now is either a comb or extracted honey producer or a queen-breeder. The larger the business the less the inclination to cover too much ground.

Since the demand for queens is growing so rapidly, we have a double purpose in mind in presenting this article to our readers. First, we wish to supply the information as to how good queens can be reared on a large scale and second we feel that our readers would like to know something of the methods of the men with whom they deal. Accordingly we have decided to describe the queen rearing apiaries of some of the better known breeders from time to time as opportunity offers.

Since J. M. Davis, of Spring Hill, Tenn., is probably the oldest queen-breeder in the United States, having been in the business for 44 years continuously, it seems fitting that his work should be the first to be described in this series. While Ben. G. Davis, his son, conducts his business entirely apart from that of the father, the two can best be considered in a single article.

As a young man J. M. Davis was employed as a telegraph operator for the L. & N. railroad. The business of the road was not heavy at the little town where he was stationed, and, having much time on his hands he became interested in bees. Like many another who has taken up beekeeping for the fun of it, he soon found in it the possibilities of a serious business. Because of the uncertainty of the honeyflow in his locality, he decided to follow queen rearing to insure a reasonably certain income. Although in the beginning he cared for his small business in connection with his job, he shortly found it to his advantage to devote his entire attention to his bees. The name Davis has appeared so frequently in the bee journals for so many years that few names among the beekeeping fraternity would sound more familiar to our readers.

THE DAVIS LOCATION.

Middle Tennessee is generally considered as one of the finest agricultural sections of America. It is a most beautiful country and the mild climate makes it a desirable section for a home. Spring Hill is located

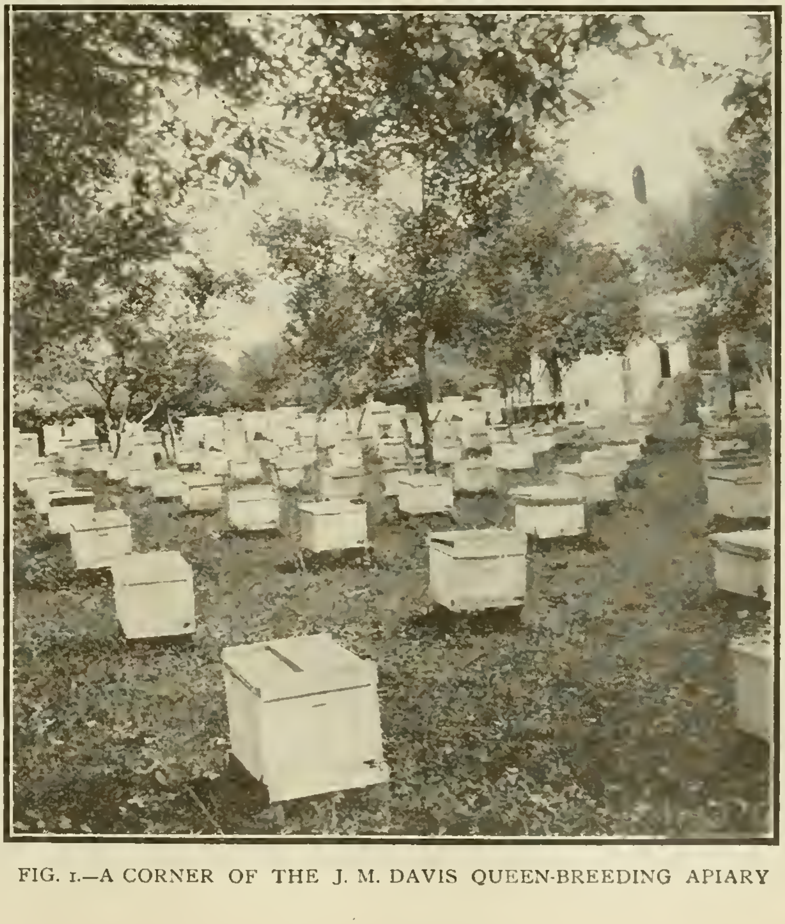

FIG. 1.—A CORNER OF THE J. M. DAVIS QUEEN-BREEDING APIARY

about thirty miles south of Nashville. The Spring Hill postoffice and village is located about a mile from the railroad. Strangely enough the railroad has given the station the name "Ewells" instead of calling it by the same name as the post-office. This leads to some confusion. The Davis homestead is located between the town and the station so that while living in the country they have all the conveniences of the town right at the door. The father, J. M. Davis rears three banded Italians exclusively, while the son, Ben G. Davis confines his entire attention to the goldens. Ben is unmarried and makes his home with his parents, but his apiary is several miles distant to avoid mixing of the strains of bees.

Our first illustration shows a corner of the J. M. Davis yard. At the time of my visit there were about fifteen hundred nuclei in the two yards. The systems followed by father and son differ in several things. J. M. Davis uses four compartment nuclei for, mating purposes as shown in the second illustration, while Ben uses only two divisions for a full colony as shown at Fig. 3. The four compartment hives have an opening at each side and one at each end to avoid mixing of the bees or danger of the queens entering the wrong compartment on returning from their mating flight. These compartments are lettered, A, B, C, and D and when manipulating them, it is the habit to begin always at A and follow through the regular system to avoid mistakes. Figure 4, shows a part of the Ben Davis yard. Double the number of hives are necessary to mate the same number of queens by his system that his father requires, since each hive has only two compartments instead of four. Just in front of this yard is a small stream which furnishes an abundance of water at all times. This is an important matter when so many bees are kept in one place. On page 341 of our October number was shown the watering device in use at the home yard.

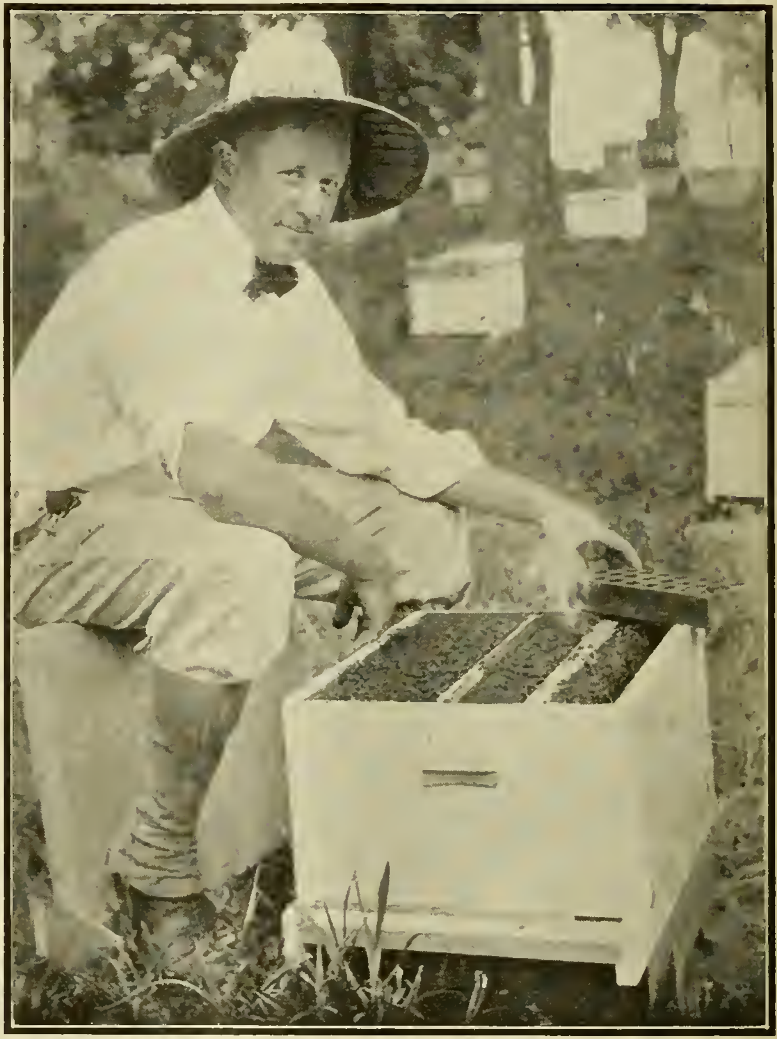

FIG 3.—BEN. G. DAVIS AND HIS MATING NUCLEI

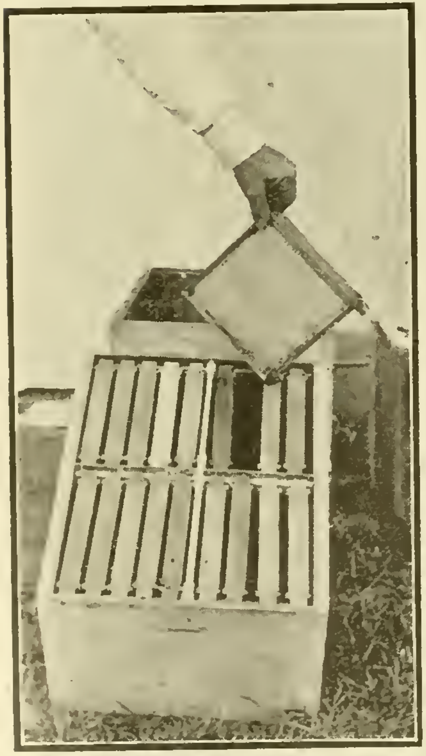

FIG. 2.—THE FOUR COMPARTMENT MATING HIVES USED BY J. M. DAVIS

GOLDENS OR THREE BANDED ?

Until recently I have been prejudiced against golden bees. Now I am not sure about it. It depends more upon the strain of bees than upon the color. The few golden queens that I have had in my yards have not been particularly good, while some of the three banded queens have made a remarkable showing. Goldens are often said to be bad robbers and thus more likely to bring home foulbrood, bad tempered and not particularly hardy. As far as I could see there was no difference in the bees in the two yards in any respect aside from color. The goldens are more beautiful and are very popular on that account. At the time of my visit there was little honey coming in from the field, yet there was no tendency to rob in either apiary.

We went into the yard and examined a number of colonies without using smoke, yet the bees' showed no inclinations to resent our presence. Ben remarked that he never used a queen as a breeder where it was necessary to use smoke in handling the colony and the goldens in this yard seemed fully as gentle as any three-banded Italians that I have seen. As far as honey gathering is concerned, I learned from J. M. Buchanan that his best colony had gathered 250 pounds of surplus while the next best produced a hundred pounds less. The big production was from a colony headed by a golden. While I am not quite ready to abandon the three-banded Italiańs for goldens I have lost most of my prejudice against them and from now on will look more to the strain of bees than to whether they be goldens or three-banded bees.

GETTING BIG BATCHES OF CELLS.

It takes a lot of bees to rear queens by the Davis methods. In the first place from two to four times as many bees are necessary to fill their nuclei as would be needed to fill the same number of baby nuclei. At the close of the season all that is necessary is to remove all the queens but one from each hive, remove the division boards and winter them as

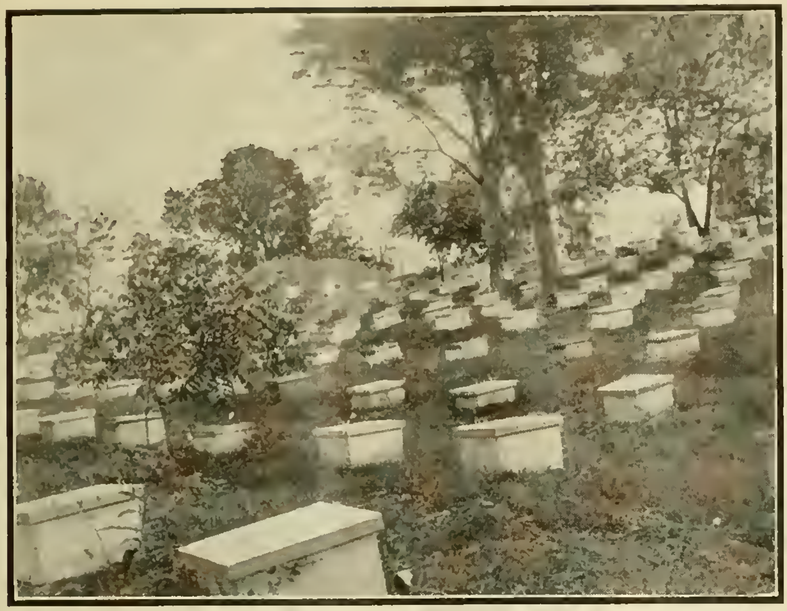

FIG. 4—BEN G DAVIS' QUEEN-REARING YARD

full colonies. The nuclei in the yard where the goldens are reared seemed plenty strong to winter as they were. Every effort is made to rear queens under natural conditions.

Colonies to be used for cell building are first built up until they are very strong. The queen and all the brood is then taken away. The nurse bees having no brood to care for will accept big batches of cells and few of them will fail. As soon as the cells are well started they are taken from the cell starting colonies and given to a strong double story colony where they are finished above an excluder. As soon as the first lot is taken from the cell building colony another lot is given them. If the same colony is used for cell building for any length of time it is given frames of sealed brood to supply it with a large force of newly emerged workers to act as nurses. Cell building colonies are not allowed unsealed brood at any time, as the design is to center all their attention on the building of queen cells. Fig 7 shows 37 nicely finished cells in one lot.

FIG. 5—ALL CELLS ARE BUILT AND FINISHED IN VERY STRONG COLONIES

I was somewhat surprised to find both father and son following the Alley plan, modified of course until it really is the Davis plan. They long ago tried the Doolittle cell cup method and abandoned it as unsatisfactory with their system. They use drone comb as a foundation for the cells. The combs are cut down until the cells are very shallow as practiced by Alley and the larvæ grafted into them as is usual with the other methods. For grafting they use the youngest larvæ, never over twelve hours old.

Their cell block for holding the ripe cells which are ready for the nuclei is something not often seen in queen yards. It is shown at figure 8. The block has two dozen cavities which hold the cells right side up. On the eleventh day the cells are taken from the finishing colony and cut apart with a sharp knife. Cells built by the Alley plan are often built so close together that some care is necessary to cut them apart without injuring the young queens. As the cells are taken from the frame they are placed right side up in the cell block. This block is carried from hive to hive and is always convenient. The cells are fastened to the side of the center combs in the nuclei where the young queens are to be mated.

Queen breeding is one of the most exacting branches of the business of beekeeping. It is necessary to plan eleven days ahead all the time and to avoid having queen cells ready to transfer on Sundays or holidays when one wishes to be away from the yard. Stormy days will often make it difficult to transfer cells that are ready or to graft new ones. To graft cells, transfer them to nuclei, and cage and mail eight to ten thousand queens in a season is a mighty busy job if the work is properly done. The breeder who does not use great care in every bit of the work will not usually last long in the queen rearing game. The public is exacting in its demands and it is only a high class product that will continue to bring the repeated orders year after year that make a queen business profitable. While the increasing interest in the business of beekeeping and the increasing number of beekeepers who buy rather than rear their queens insures the permanence of the queen breeding business, the man who is not regular in his habits, careful as to details and painstaking in all his work will do better to stick to honey production than to take up queen breeding. On the other hand the specialist who can meet the conditions finds queen rearing a fascinating and profitable line of work.

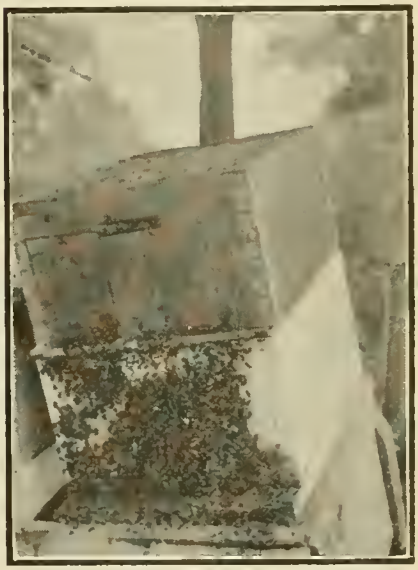

FIG. 6.—THE CELLS ARE FINISHED ABOVE AN EXCLUDER WITH QUEEN BELOW

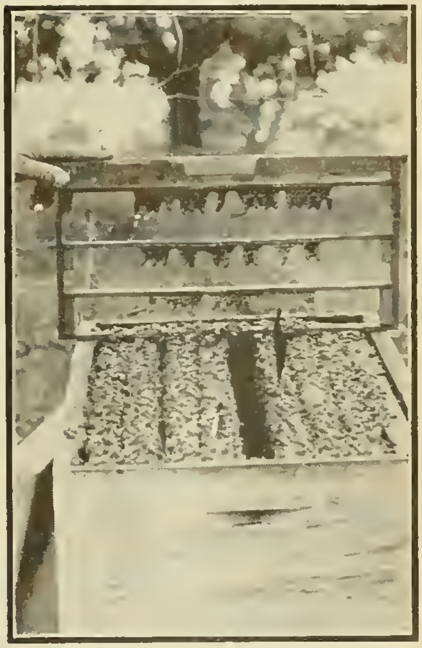

FIG. 7.—A BATCH OF 37 FINISHED CELLS

AMERICAN BEE JOURNAL
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA

PUBLISHED MONTHLY AT
1st Nat'l Bank Bldg., Hamilton, Illinois

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C. P. Dadant, Editor.
Dr C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Those Comb Honey Rates

In our January issue we called the attention of our readers to the fact that the Western Classification Committee had made a change in their rates so as to give a lower rate on comb honey when properly protected.

Carload shipments go at fourth class rates.

Local shipments unprotected are subject to a rate which is double the first-class rate.

Properly protected shipments of comb honey will take the first-class rate, and proper protection means that your shipments must be crated, must be protected by at least four inches of straw or excelsior in the bottom of the crate, and all crates must be marked, FRAGILE—THIS SIDE UP.

We call the particular attention of our readers to these rates so that they may govern their shipments to take the lowest rate possible.

Bees and How to Keep Them

We are in receipt from the Department of Agriculture at Ottawa, Canada, of a 56-page bulletin on the above subject. It is by the well-known Dominion Apiarist, Mr. F. W. L. Sladen. It is impossible to put in so narrow limits more information than has been supplied within those pages by the author. Besides, the 40 cuts which the bulletin contains are most excellent pictures, many of them half-tones, which help the descriptions by the illustrations they furnish. The Bulletin is No. 26 (2d series), and should be in the hands of every beekeeper in Canada.

The National

The beekeepers need a strong national organization. The present association has survived numerous storms that have threatened to wreck it, and it is to be hoped that under the leadership of Prof. Jager it will profit by the mistakes of the past and gain a new lease of life.

In connection with this, the strength of the American Poultry Association is worthy of study. The last report shows a membership of 7000 and a cash balance in the treasury of more than $10,000. In addition there is a stock of books worth $8000 beside several thousand dollars worth of other property. A paid secretary is employed at a salary of $2000 per year, and he is furnished with an office assistant and stenographer.

An association of this kind can hope to be strong only by confining its activities to such things as all members find of mutual interest. The poultry association has confined its attention to educational work exclusively, and while there have been numerous differences of opinion and at times some feeling manifested, there has been no serious danger to the organization as a result. Eastern and western producers are both seeking the same markets, and every activity that tends to increase public interest in the product tends to the betterment of the markets and is to the equal interest of all.

It is to be hoped that by eliminating from our association the factors which have caused the past disasters, success will come. There has been some sentiment in favor of disbanding the old organization and starting entirely new. However, it seems to be generally agreed that the work of the association will be conducted along entirely new lines.

F. C. P.

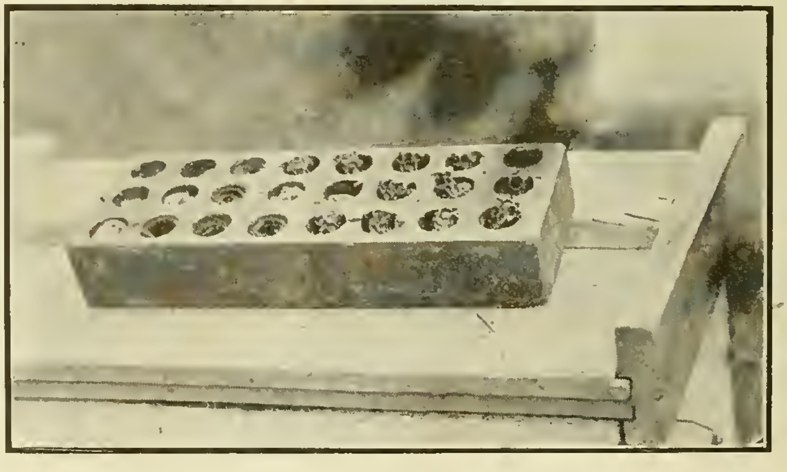


FIG. 8.—BLOCK FOR HOLDING QUEEN-CELLS (See preceding page)

Crop Reports

Our active and efficient beekeeping representative at the Bureau of Entomology of Washington, D. C., Dr. E. F. Phillips is very anxious to see the beekeepers appreciate the usefulness of accurate crop reports. In our December number, we spoke of the Ontario people and their committee on crops and prices. They have a good system, but even there the beekeepers do not all sufficiently appreciate the benefits to be derived from an efficient crop report. If all our beekeepers volunteered to fill out the crop reports sent to them in blank, instead of neglecting them as so many do, they could secure information gathered in statistics that would enable them to set a correct value upon their honey crop. This is coming some day, for our sons will appreciate this better than we do, but we should hasten the day. Make a resolve always to fill out and mail the crop report blanks which are sent to you. If you do not receive blanks, write to Dr. E. F. Phillips, at the Bureau of Entomology, Washington, and ask for them. They will be gladly forwarded, and statistics will be returned to you when the time comes.

Bees in Moving Pictures

Quite a little has been done already to show work in the apiary in moving pictures. But we now learn of a project in this line, by Geo. A. Coleman, of the University of California, to show ascenario on a large scale of the natural history, anatomy and embryology of the honeybee; manipulation, comb and extracted honey production, queen rearing, diseases and enemies, manufacture of supplies, beekeeping in different countries, etc. In short, Mr. Coleman would propose to supply colleges, schools and beekeepers' conventions with all sorts of moving pictures of the bee work.

This is an immense undertaking, but we wish success to the project. Sooner or later things of this kind will be in vogue in all lines of business.

Apiary at Michigan State Prison

Mr. O H. L. Wernicke has our thanks for a copy of the Michigan State Prison Report, containing a pretty picture of their house-apiary, West Prison farm. This is probably a unique experiment. The teaching of beekeeping at the Michigan State Prison farm has already been mentioned in our September number, page 311.

Nosema Apis in Australia

The Journal of Agriculture of Victoria, Australia, contains in its October, 1916 number, page 629, a very interesting article on *Nosema apis*. It appears that this parasite is found in many healthy bees.

"Bees from 88 widely-separated apiaries were examined and the presence of the *Nosema* parasite proved in all but two, one of which was the departmental apiary at the Burnley School of Horticulture. In several instances the bees which showed *Nosema* infection came from apiaries in which no mortality or dwindling ever occurred, and it appeared, therefore, doubtful whether the presence of the parasite in the bees be in itself necessarily fatal, or whether it greatly interferes with the productiveness of the hives excepting under certain conditions due to climatic influences."

Something similar has already been noticed elsewhere. Although the presence of *Nosema* may have influence in helping to cause disease, it is quite probable that only under unfavorable conditions does the parasite have an ill influence on the health of the bees. This need not astonish any one, since we are told that the germs of tuberculosis have no effect upon healthy individuals.

Those Local Markets Again

In our January issue we urged beekeepers to keep their local markets supplied even if it was necessary to purchase honey from outside to do it.

If other extracted honey is not purchasable, there is still one loophole left so as to keep your customers supplied. Induce as many of them as you can to take a little comb honey. Comb honey is easily obtained. In fact, the market on it is dull. You can help relieve this by using a few cases locally, and at the same time you can prevent the substitution of something else for honey by your customers.

Granulation of Honey—Preventing it By Solarization

At the Toronto meeting in December last, Mr. J. F. Dunn, president of the Lincoln and Welland Beekeepers' Association, spoke of the success which he has in keeping honey from granulating by exposing it to sun heat. He would like to know whether there is any chemical change in honey thus exposed and what the change is. We believe that there must be some evaporation of moisture, and that alone might be sufficient to prevent granulation. However, it is an open question. If honey can be prevented from granulating by sun heat without too much loss of time and in large bulk, there may be some advantage in making use of the method for the benefit of customers who do not like granulated honey. There is probably no loss of flavor in such a method, as the heat would not be great enough to cause the evaporation of the volatile essential oils which give the flowers their fragrance and the honey its exquisite flavor.

We would like to have Mr. Dunn tell us his method, for publication. It should be tried and the exact amount of evaporation ascertained. Reports on this subject from different sources, next summer, will be interesting.

Mr. Dunn suggests to us that samples of solarized honey be forwarded to Mr. Alin Caillas, the Paris Agricultural Chemist, for analysis. But Mr. Caillas is at the front, in the trenches, and very little of this kind of work can be expected of him before peace comes. We must have in this country some capable analysts who can make the test.

Attend the National

Make your plans if possible so that you will be able to enjoy the three day session of the National Association in Madison, Wis., Feb. 6, 7 and 8. It will be worth your while.

Isle of Wight Disease in Liguria

Regarding the bee-disease in Liguria, mentioned on page 372 of November, 1916, we have received a letter from Engineer Capponi. He says:

"The disease of our bees was the Isle of Wight disease, for I have ascertained it through an English apiarist who lives in the infected district and who visited my apiary. He states that the disease has stopped in his district and we hope it will be the same here.

"The maximum of infection was during July, August and September. At present, Nov 5, it seems to have stopped. If it starts again, I shall send you some simple bees. But do you not think we should seek for the germs of the disease in the honey? If so, it would be well to heat it.

"In case of further trouble, I will have some of the honey analyzed and will let you know the result. But I hope the disease will not occur again."

Engineer Capponi, whom we mentioned in our "Notes from Abroad," in May, 1915, lives at San Remo, on the Riviera, where they raise roses and carnations, by hundreds of acres, during the winter, for shipment to the capitals of northern Europe, in peace times. During our visit of 1913, Mr. Capponi offered Mrs. Dadant a beautiful bouquet of carnations, almost an armful. As we reminded him of this in our last letter, he adds:

"If the signora Dadant were here at present, I could offer her much prettier flowers than then, especially General McArthur roses, American roses which grow in my garden and are magnificent."

Value of Beekeepers' Meetings

The value of an exchange of ideas at beekeepers' meetings is probably underestimated by a majority of beekeepers. The quotations following are from the "System" Magazine, clippings from which were kindly forwarded to us by a reader:

"I was told just the other day that a certain automobile manufacturer is arranging to send an efficiency engineer to the plants of his competitors—some of them manufacturers of the same priced car—to gather up ideas that might be profitably applied in his own plant. The engineer is to go, not as an 'industrial spy,' but with a letter of introduction of the manager, requesting the courtesy and offering to reciprocate.

"If there are a hundred concerns in business and each one keeps its original ideas to itself, each has the original ideas of one. If general exchange is the rule each has the original ideas of one hundred."

So with our business of producing and marketing honey. One of us may have an excellent idea, but how much better will it become if we add the original ideas of a dozen or hundred other beekeepers.

Bees Wintering About Normally

Indications so far are that bees are wintering well. Those left out-of-doors, in the central West at least, have had good flights at intervals in January. In the northern half of the country the snow has helped to protect the clover. Unfortunately, in this immediate vicinity the ground is very dry—not conducive to the best wintering of clover.

SEVENTY YEARS OF BEEKEEPING

The Second of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

AFTER the discovery of parthenogenesis, mentioned in our previous paper, the most important discovery for beekeeping was the invention of a practical movable-frame hive. The control of the colonies, to help them in all their needs, to treat them in case of disease and to promote or prevent increase, is based entirely upon the ability of the apiarist to examine every part of the hive. In 1851, Mr. L. L. Langstroth invented the first practical movable-frame hive, this invention consisting principally in frames hanging by shoulders in rabbets at each end of the hive, and separated from the hive walls by a bee-space of from ¼ to ⅜ inch. This bee-space, which prevents the bees from gluing the frames to the body, bottom or top, was the key which solved the problem of comb handling, since it obviated the faults of the former inventions.

At nearly the same time Mr. Langstroth invented this, Berlepsch, in Germany, invented a similar hive. the difference between the two being the movable ceiling. The Berlepsch hive opens from the rear, the ceiling is nailed fast, the hive resembling a cupboard. The Langstroth invention enables the apiarist to lift up any comb from the hive without disturbing the others. Only a few years later, in France, L'Abbé Sagot invented a hive almost identical with the Langstroth, which became quite popular in his vicinity before the Langstroth invention was known on the European Continent.

These inventions were far from having smooth sailing, for the French bee magazine, L'Apiculteur, established in 1856 by Hamet, and still now published, ridiculed the movable-frame hive, saying that the only advantage of these hives was the facility of their being taken apart "like a puppet-show." His criticisms were later to be overcome by an irresistible popular current in favor of the new system.

In October, 1851, Mr. Langstroth wrote: "The use of these frames will, I am persuaded, give a new impetus to the easy and profitable management of bees." This was true, and one of the first results was the importation into America of the Italian bees. Langstroth has earned and secured the title of "Father of American Beekeeping."

As early as 1842, Capt. Baldenstein, a Swiss, had brought over, from Italy to his castle in the Rhætian Alps, a colony of Italian bees. His praise of them, in the Bienenzeitung, in 1848, caused Dzierzon to try them, and soon queens were being reared by him to supplant the common race. Not only on account of their greater strength and prolificness, but because of the experiments which their introduction permitted did this race cause a progress in beekeeping. For instance, the age at which the young bees take their first flight and the length of the worker's active life were easily ascertained by the introduction of bees of a different color.

The first Italian bees brought to America were imported in 1859, by Samuel Wagner and Richard Colvin. In 1860, Parsons, of Long Island, received a number, and later many queens were imported by Adam Grimm, Chas. Dadant and others. The Italians have often been noticed working on the red clover when the common bees did not do so. Evidently in some cases their tongues are longer than those of the common bee.

The Carniolan bees were also early mentioned as better bees than the common race, by the Baron of Roschutz, though they never have been so highly recommended, owing to the greater difficulty of tracing hybridization because of the lack of plainly distinctive signs like the yellow bands of the Italians. Although the Carniolans are slightly larger and less dark than the common black bee, hybrids are difficult to distinguish.

In 1853, L. L. Langstroth published the first edition of his book, "The Hive and Honey Bee." This book, written without attempts at supplying a textbook, became the *vade mecum* of practical apiarists. Editions followed each other in rapid succession in 1857 and 1859. Shortly afterwards, Moses Quinby published his "Mysteries of Beekeeping Explained," in which he recommended a hive similar to that of Langstroth, with the same hanging frame, but of different dimensions, taller and deeper than the Langstroth standard.

In 1861, the American Bee Journal was established at Philadelphia, by Samuel Wagner. The first year of that magazine is still considered as exceedingly valuable by those who are fortunate enough to possess a copy. Articles by Dzierzon, Rev. Geo. Kleine, Berlepsch, Donhoff, our own Langstroth and other Americans who have also passed away, such as W. W. Cary and H. Nesbit, contain valuable information. The only writer still living who wrote for the Bee Journal at that date is our old friend M. M. Baldridge.

A method of securing the pure fertilization of young queens in localities where black bees were in entire control, was to retain Italian drones in queenless colonies late in the season when nearly all drones were put to death in healthy colonies. Early in the forenoon both the colonies containing the Italian drones and those having queens ready to mate were fed with warm and diluted honey, and thus incited to fly simultaneously at times when other drones would still remain in the hives. At the present day pure fertilization of queens is much better controlled by the removal of drone-comb from undesirable hives and its replacing with worker combs, while in the desirable colonies drone-comb is placed in the center of the brood-nest. It does not invariably insure choice matings but is a great step in that direction.

Golden Italians were already produced by in-and-in breeding, selecting the brightest, as reported by E. A. Brackett, "a distinguished Boston sculptor," on page 92 of the American Bee Journal for April, 1861.

Unfortunately, the Civil War, then raging, compelled Samuel Wagner to suspend the publication of the American Bee Journal until 1866, when it was again resumed by him, at Washington, D. C. The original price of $1.00 was advanced to $2.00, owing to the "greatly increased cost of paper" due to the war. History repeats itself.

In this second volume we find the name of another notable beekeeper who is still living, Dr. G. Bohrer, then of Indiana, now of Kansas. In this volume also, May, 1867, we find the first mention of comb foundation. J. L. Hubbard, of Walpole, N. H., called upon Mr. Henry Steele, of Jersey City, who presented him with a box of it, "to experiment with." But this was evidently very defective, for Mr. Hubbard suggested that sheets be made of cotton cloth or some other substance dipped into wax and impressed with the cells of the bee. It was later tried, as was tin-foil and other substances and found impractical.

A. I. Root also began in this volume his "Experience of a Novice in Beekeeping," witty and practical articles which were so well liked that he started a magazine of his own, in 1873, Gleanings in Bee Culture, perhaps the widest read magazine on our industry at the present day.

In the same year, November, 1867, Charles Dadant, began also to write for the American Bee Journal.

Adam Grimm's first large importation of Italians, from the apiaries of Prof. Mona, of Bellinzona, near Lake Maggiore, was also made in that year. He brought with him some 40 queens.

In 1868, Charles Dadant imported also largely from the Blumhoff apiaries of Biasca, near Bellinzona. But the transportation of bees across the ocean was for a long time subject to great losses, for the modern methods of packing them were unknown and shippers usually gave them too much food, in some instances literally drowning them in honey.

My next article will deal with the invention of the honey extractor.

The Winter Cluster

BY C. E. FOWLER.

I THINK Mr. Spuehler and the Editor have both missed it on page 410, December issue, when they say that the bees in the center of the cluster are more active (thus increasing the heat, as the outside is colder) *because they are in vitiated air*. I have experimented on clusters with thermometers placed over (and under glass covers with very warm cushions over the glass and metal covered telescope covers over the cushions.

I have one in the backyard now, a very small nucleus about as large as your two fists. The thermometer outdoors is 32 degrees; over the empty part of the hive (no frames) 44, and directly over the cluster 51. The thermometers are on top of the glass, and the cluster which is ¼ inch below the glass and shows about 2½ inches in diameter, is the thickness of one bee over the frames. I can see the bees through the glass. I can see them move and see how far apart they are. I can see down into the cluster, and there is no possible chance for vitiated air to stay inside the cluster.

To return to the hive that I just looked at: There is enough warm air rising from the cluster to heat the glass 7 degrees more directly over the cluster than 8 inches away, which would give much more circulation than in summer and more than needed. Now just imagine a house with open doors all around it inhabited by soldiers *in cold* weather and the soldiers trying to close the doors by standing in them. Can you imagine them closing the openings so tightly that the house would have vitiated air in it, and the inside soldiers starting the electric fans?

In an ordinary sized room in winter a hole in the window a foot square would give more than enough fresh air. I think it would be impossible for the bees to shut off more than 75 percent of the openings. I can very easily explain why the cluster is warmer inside than it is outside. First, let us examine the cluster through the glass. If the cushion over the glass is warm enough, the shape of the cluster is similar to the letter U or a hemisphere, the warm glass forming the top of the cluster. By taking the cushion off you can see the middle of the cluster and measure the diameter of it with a rule. The colder the outside air the smaller and warmer the cluster; the warmer the outside air the larger the cluster until the outside air is 57 degrees, when *presto! change!* there is no cluster, the bees are spread all through the hive and summer has come to the bees. This will happen any warm day anytime in the winter (provided of course there is *no brood*). A few hours warmth will do it.

Now suppose the hive gets below 57 degrees, a cluster is immediately formed, then the outside bees get cold and crawl inside to get warm, and if the inside of the cluster is not warm enough they begin to rub their hands together, and as it gets colder the cluster gets smaller and the outside bees get cold quicker, and when they go inside they say, "What is the matter with you fellows, why don't you put more honey in the stores," and they fill up with honey and get warm. With a few glass covers look at the bees any time without breaking the seal and learn many things that you could not otherwise.

Hammonton, N. J.

[Yes, friend Fowler, I can imagine men huddled together so closely that those inside will have to breath the air already vitiated by their comrades. But we want all the arguments and all the opinions we can get. So let us have more.—EDITOR.]

Shipping Bees in Packages Without Combs

BY M. C. BERRY.

WHEN only 10 years of age I became interested in bees, and ever since my interest has been increasing. However, twice I was persuaded to desert the little fellows, once to attend college in Ohio, and again to engage in the mercantile business in Missouri and Colorado. But the call of my boyhood's buzzing friends was too strong, and soon I was back with them again. Now, after years of hard although pleasant work to one who loves bees, our colonies number over the thousand mark.

In the year 1904 we shipped our first bees in packages. During this year we filled quite a number of orders for bees by the pound. However, our conveniences for making cages for bees were so very crude and the mode of feeding bees while in transit so poor that after one year we discontinued shipments for the time being.

Now we have a shop as well as warehouses where during the winter months we make and store cages, to be used in the shipment of bees by the pound, besides many little mailing blocks used in sending queens through the mails. All material used in manufacturing these cages is carefully selected basswood lumber, the lightest and we believe the best for this purpose. All cages are made as light as is possible and still preserve strength for the hard handling they often get while in the hands of the express people.

At the present time we are unable to ship bees in large packages by parcel post. There may come a time when this will be possible and practical, but I believe the express method better and more advisable now, even if the post-office authorities were willing to take the larger packages. One trouble with the parcel post is lack of room and a tendency to cover up and smother the bees in mail sacks. In order that they shall go through in good condition, bees in packages must not be crowded for ventilation.

When spring comes and the shipping season draws near, we hasten to build up our colonies into an overflowing condition. This we do in order to be able to get all of the bees for our package trade from above the queen-excluders. By this method we are able to give our customers nearly all worker bees and very few if any drones. We also save a great deal of time looking for the queen before shaking the bees through the funnel into our cages. During the season just past we were able, by practicing the above methods, to take over 500 pounds of bees from one apiary of less than 100 colonies, besides making a surplus of 75 pounds of honey per colony.

One of the first and I believe most important requisites in package shipping is to have a large well ventilated cage. Next the bees must be amply supplied with food. The candy used is made of pure pulverized sugar and honey just of the right proportions to remain moist and still not run and daub the bees while *en route.* This candy is placed in the cage so that it can always be had from above. Thus the bees are able to cluster naturally and still have their food so convenient that it is unnecessary for them to break their cluster. Water is given to bees in transit only during extreme warm weather or when shipments are intended for parties living in the arid West. In such cases a small can filled with water is placed alongside the candy at the top of the cage. Bees receive the water through a small perforation which allows only a drop at a time to pass through. Excepting as above I believe water unnecessary in combless and broodless packages.

During the last few years the shipping of bees in packages has become a large industry. Safe and satisfactory delivery is made to nearly all parts of the United States and the greatest part of Canada. Beekeepers in the North and West report that bees by the pound from the South can be made to pay very handsomely on the invest-

M. C. BERRY'S DIXIE QUEEN YARD, DOWN AMONG THE PINES ment. A one pound swarm of bees complete with a good queen very often makes a surplus of 50 to 100 pounds of comb honey during the first season. However, in order to have the best results it is necessary to get bees early in the season, say the first to the last of April, depending of course on locations. Also it is advisable, if possible, to have drawn combs partly filled with honey on which to hive the bees when they arrive. If no honey is coming in, it is also best to feed a small amount of sugar syrup (about half and half). Continue feeding until you are sure some honey is coming in, as this stimulates brood rearing.

Buying bees by the pound without queens is being practiced by many northern and western beekeepers. Many times by adding from one-half to one pound of bees to the cluster of a weak colony, especially when taking it out of winter quarters in the early spring, one is able to save a valuable queen and build up a colony which becomes strong in time to procure a nice crop of honey. Otherwise this same colony, perhaps, if it lived at all, would only get in shape after the main surplus honey flow; too late to accomplish anything this season.

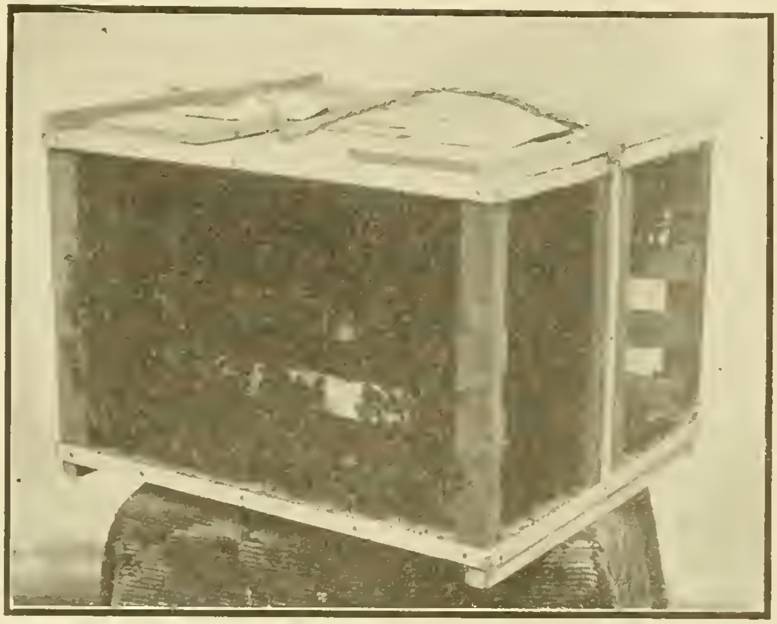
When receiving a shipment of bees from the South, we always advise the beekeeper to gorge the bees before releasing them. Sugar syrup made as above is about right for this purpose. Sprinkle this syrup on them from all sides, shake them about in the cage, and when all of the bees seem to be full as well as wet, they are ready to be shaken into the hive or else dumped in front of their new home and allowed to run in much the same as natural swarms. If one is strengthening weak colonies by adding bees, it is a good idea not only to wet and gorge the bees you are running in but also sprinkle syrup on and smoke those already in the hive. By practicing these methods one should have little if any loss from bees flying and none from fighting.

Now if one is buying bees for increase and has no combs on which to hive the swarms, we advise full sheets of foundation and also daily feeding for the stimulation of comb building as well as brood-rearing. Give each colony say from one pint to one quart of syrup daily until honey is coming in. A small pan with excelsior in it makes an excellent feeder. Put a shallow empty super on the hive, setting pan containing the syrup just over the cluster of bees. Unless the weather is very cool the bees will soon remove the syrup from the pan to the combs below.

The one pound swarms, if purchased quite early in the season will, if treated as above, build up into nice strong colonies the first year, and very often not only gather enough honey to winter but also some surplus. However, as a rule you should not expect much surplus honey when a colony has to build out combs from foundation unless there is a late fall flow. If you demand honey the first year, regardless, I would advise you to buy the larger swarms, the two and three pound sizes. Our Canadian friends advocate the larger swarms for all purposes, as the seasons there are short. Some of them even prefer the five-pound swarms, and say they are the best investments for their locality. The five-pound swarms are fine, but we have always thought them expensive.

It has been said that in time a great many northern and some western beekeepers would find it advisable to kill their bees in the fall and replace by procuring bees in packages from the South the following spring. This I do not believe advisable, nor will it be practiced to any great extent. To be sure the saving of honey perhaps would offset the cost of the bees from the South, but there would not be enough profit to make it practical. Also, would it be quite fair to the little fellows after they had toiled so hard for you? In case of winter losses, or desire for early increase and for strengthening weak colonies, bees in packages are without a doubt a success.

Hayneville, Ala.



A PACKAGE OF BEES AT THE END OF A THOUSAND MILE JOURNEY

Swiss Association—A Model to Follow

BY C. W. AEPPLER.

ABOUT one-half of the November issue of the "Schweizerische Bienenzeitung" (Swiss Bee Journal) deals with the horrors of the present war and describes the difficulties that have been encountered by the Swiss beekeepers in obtaining sugar for winter stores. As the Swiss beekeepers depend almost entirely upon sugar syrup for winter stores, it is difficult for us to realize how great a burden they are forced to bear, even though Switzerland is "a peaceful island lying amidst the howling billows."

When the war broke out in July, 1914, most of the beekeepers had no sugar on hand to provide their bees with winter stores. As usual, a high price was obtained for honey, and sugar could be fed very economically. The Swiss beekeepers must depend largely upon sugar shipped in from Germany and France. With a little successful diplomacy enough sugar was secured in October, 1914, to provide for winter stores, and so the bees were saved from starvation.

OVER A HUNDRED POUNDS OF BEES READY FOR SHIPMENT

The Swiss Beekeepers' Association is scientifically managed, and this year sufficient sugar was secured for winter stores for the 224,000 colonies operated by its members throughout that peaceful nation. When we consider the size of that little country, with its many square miles of rugged mountains, our fears of overstocking should be lessened. The 1910 census credits Wisconsin with 95,600 colonies, and Minnesota with 56,600. We have many a lesson to learn from the Swiss beekeepers. If the beekeepers of the United States were as united as they are in one common motive, the question of overstocking, better markets and better prices would be a thing of the past. What we need most is a powerful *national organization* modeled after "Des Vereins Schweizerischer Bienenfreunde" (Swiss Beekeepers' Association), and when the National meets at Madison in February, it might be well for us to incorporate some of their principles with ours.

Madison, Wis.

No. 4.—Among Eastern Beekeepers

BY THE EDITOR.

LEAVING Altamont, late in the afternoon of Aug. 11, by way of Albany, we traveled 75 miles to Glens Falls, on the upper Hudson, at the foot of the Adirondacks. The road was by way of Saratoga. It is the best automobile road that I have ever traveled, not excepting European roads, for it is made of Tarvia or asphaltum and has no dust whatever. The meeting was called by the Adirondack Beekeepers' Association for the next day, at the home of Mr. H. E. Gray, one mile from the old historic spot of Fort Edward. A pretty country, in full view of the Adirondacks, with the Hudson winding around in the woods.

THE ROADS OF NEW ENGLAND ARE EXCELLENT

At the meeting, there were as many ladies as men. The attendance was small, not over 35, but all practical people. They were all owners of large apiaries, none of them under 50 colonies. The crop was reported good and some anxiety was shown as to the probable price of honey.

Here, Dr. Gates left me to return to Amherst. I was to go alone by rail to the Vermont meeting. I remained over Sunday with the Gray family who had invited me and proposed to take me to Lake George. This trip was made with Mr. Geo. L. Cary, president of the Association, in his Ford.

Lake George was called "Horicon" by the Indians; "Lac St. Sacrement" by the French. Many of the terrible deeds of the French-Indian wars were perpetrated along its shores. Its beauty is nevertheless beyond description, despite its history. It is often said that Americans should visit America first. This is right. The resorts of Switzerland are not more beautiful than this one which compares favorably with the Lake of Thun. When our summer resorts are as old in civilization as those of Europe, there will be nothing for us to envy, in Europe. The main advantage of Switzerland is that its beauties are gathered together in a very small compass, while our country is immense and its beauties much scattered.

On Monday the 14th, I bade goodbye to my pleasant hosts, Mr. and Mrs. Gray, and left for Middlebury, Vermont. Before leaving I saw the immense paper mills of Hudson Falls, where mountains of cord wood are crushed into wood pulp for paper. Train loads after train loads of it are brought there from Canada and thousands of tons of paper produced. It seems as if we might eventually exhaust the forests, even of Canada.

On the way to Middlebury, the road passes Rutland, noted for its marble. In spots, the railroad embankments are filled with broken marble. This reminded me of Carrara, in Italy, whose marble is shipped all over the world, and through which we passed on our trip of 1913. Vermont marble does not seem inferior to it.

At Brandon, one of the passengers walked up to me and said: "Isn't this Mr. Dadant?" It was Mr. G. F. Hendee of Pittsford. He had recognized me from photos, though we had never met before. He was going to the Middlebury meeting.

Middlebury is located in a fine, broad valley, sloping towards Lake Champlain, between the Adirondacks and the Green Mountains of Vermont. It is a good region for bees, for I met many practical beekeepers and their crop of white honey was fine. Our readers know that it is at this point that one of the oldest contributors of the American Bee Journal, Mr. J. E. Crane, lives. He and his son Phillip manage something like 1100 colonies, all in chaff hives.

The meeting was held at the Addison House, about 40 beekeepers being present. Mr. F. D. Manchester, the secretary of the Vermont Association, had kindly invited me to stop with him.

At the meeting, the main subject discussed was "Swarm prevention" and I spoke on this myself, since it is one of my hobbies. One of the points I raised was the prevention of drone production, as the presence of drones incites bees to swarm. Mr. Crane made the remark that he had found bees to build drone comb on worker foundation and called upon his foreman to make a statement on this. About a dozen sheets of foundation, out of some 2,000, used by them during the season, were changed in this way. This was a surprise to me, although Mr. Latham had already exhibited to me about 2 square inches of comb which the bees had also built on foundation and which was worker on one side and drone on the other. Dr. Miller had pronounced this an impossibility, but it was a fact, just the same. My explanation is that at times in the laminating of the foundation it becomes slightly stretched when sticking to the cylinders. The least stretching the other way, or up and down, when given to the bees, causes the forming of larger cells than common which are then used for drone breeding although hardly large enough. The foundation which is drone on one side and

H. E. GRAY IN HIS APIARY AT FORT EDWARD, N. Y.

worker on the other must be defective in wall outline and the bees must be very desirous to have drone comb, when they overlook the shape of the base to produce such irregular combs. The only redeeming feature to this disagreeable performance is the very small proportion of such combs built, about 6 per thousand in the Crane experience. Yet, in the manufacture of foundation we ought to be able to forestall this entirely. When it happens, the only way is to remelt such combs and replace them with perfect ones.

At the Manchester home, that evening, I saw a sample of success with very large hives. Mr. Manchester uses 11-frame Langstroth hives, with supers holding 40 sections and he had a tremendous crop of clover honey, both alsike and white clover. In many sections of the East, alsike clover grows wild in the meadows and the pastures.

At this place I also tasted pure dandelion honey for the first time. We often see the bees on dandelion blossoms, but with us they never harvest enough to make a surplus. I was skeptical on this subject. However, when Mr. Manchester put a section of dark yellow honey upon the table and I took a mouthful of it, I recognized without doubt the flavor of dandelion, not bitter, but strong, with a very positive scent of the bloom.

Monument Marking Spot Where Stood Old Fort, Edwards

That evening we visited Messrs Larrabee and Holmes, apiarists living some 12 miles away. The weather was delightful and a clear full moon gave us almost as fine a light as daylight. We drove clear down to Lake Champlain, at Larrabee's Point.

The next day, I called on our old friend G. W. Fassett and afterwards on the Cranes with whom I stayed for lunch. We took a ride in one of their autos to an outapiary located at the foot of the Green Mountains, in the shade of the pines.

Mr. Crane has a very nice method of inducing the bees to finish the outer sections of a crate, at the same time preventing them from staining the sealed central sections by traveling upon them. When all but the outer rows are filled he uses under the crate a honey-board, which is closed in the center and open on both edges. This compels the bees to pass first to the open unfinished sections, which they fill more readily in consequence. Mr. Crane is the originator of the corrugated-paper shipping case in which each section is isolated. They were preparing the crop for market and had a half dozen men scraping and packing sections. They have numerous swarms, but have a great demand for bees every year from the cucumber growers, for hot houses. They get rid of their extra colonies in this manner.

Mr. Crane is foulbrood inspector. He reports great improvement in conditions over former years, but much work still remains to be done. In his opinion the movable-frame hive, with combs built crooked in the frames, is the greatest hindrance to the cleaning up of the disease. Better have box hives than frame hives with immovable frames, owing to crooked combs.

A Vermont beekeeper, Mr. C. H. Crofut, of Arlington, who was like me invited to lunch at the Crane home, quoted to me a popular rime descriptive of the things in which Vermont excels:

> "Horses, maple sugar and beautiful women.
> The first are fleet,
> The others sweet,
> And all exceeding hard to beat."

Fleet horses and pretty girls are also a claim of Kentucky. But then aren't the girls pretty everywhere? And isn't honey a product of both Vermont and Kentucky, and sweet too? In my opinion, the rime must be rewritten, including honey in the desirable products of Vermont.

I was pleasantly disappointed with the part of Vermont which I visited. I was looking for rough hillsides, stone fences and other evidences of a mountainous country. I saw beautiful fields and pretty cities. But the mountains were not far away and I am told there is plenty of rough country.

I next went back to Amherst, where I was to meet Mr. Bocock, the Englishman sent to the United States by the British Beekeepers Association to study our bee paralysis and compare it with Isle-Of-Wight disease. This will be the subject of my next letter.

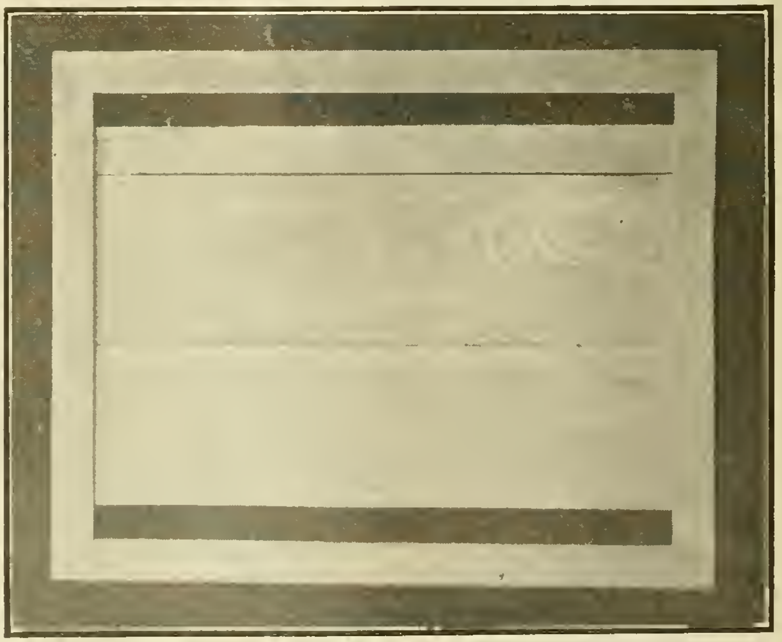
Shipping Full Colonies and Nuclei

BY H. D. MURRY.

A CORRESPONDENT noting my uniform success in shipping full colonies and nuclei, never having a single loss, desires that I tell through the columns of the American Bee Journal just how I "do the trick." It had never occurred to me that there was any trick about it.

The first experience I had along that line was in the latter part of January, 1906, when I shipped 18 full colonies from Jackson, Miss., to Alice, Tex., in a car of household goods. The bees were in 8-frame dovetailed hives with Hoffman self-spacing frames, the combs built from full sheets of medium brood foundation in wired frames. The entrances were the usual ⅜-inch and full width of the hive.

I had observed that in moving bees from one apiary to another, the bees have a tendency to cluster on top of the frames. As these colonies had a strong force of bees, I reasoned that it



MR. CRANE'S BOARD FOR FINISHING SECTIONS ON THE EDGES OF SUPERS would require considerable space above the frames to accommodate them, so I made a rim of one inch lumber two inches deep to fit the top of the hives, and covered that with wire-screen, such as is used to screen windows. On top of the wire I put a second rim of ⅜-inch stuff to hold the wire firmly in place and stop any leaks that might occur from the buckling of the wire. Before placing the screen on the hive I nailed a piece of ⅜-inch stuff lightly across the ends of the frames. When the screens were placed in position, the end piece of the screen frame rested on that ⅜-inch piece and prevented the frames from bouncing up and down while in transit. The entrances were closed with wire-cloth to give upward ventilation.

Although the weather was warm, as we have it in the South sometimes, there was no provision for watering the bees *en route*. They were on the road just ten days, traveling about 1000 miles. The weather turned quite cold about three days before they reached Alice, but had warmed up again when they arrived. Upon arrival they were moved to their permanent location and released. I did not travel with them, but left them to the tender mercies of the railroads and went through on the passenger trains. When I released them, I went through the hives to see how they had stood the journey. They were all in perfect condition and most of them had a patch of sealed brood in one or two frames. I said all were in perfect condition, but there was one colony smashed up pretty badly. Evidently it had been dropped by some brakeman or other person who had occasion to handle the shipment.

I have gone fully into details about this shipment in order to give the reader a fair chance to draw any lesson from it that it may contain. Since that time I have shipped full colonies by express to various distances, from 200 to 500 miles in winter and summer, and I have yet to lose the first colony. There is, however, this difference between shipping colonies in winter and summer: If I ship in summer, I place an empty comb filled with water in the hive, or water the bees well just before they are loaded on the car. I have also used a screen only one inch deep. If the colony is not very strong that is sufficient. The idea I have in mind is to give the bees room enough to cluster above the frames, if they desire to do so.

I have shipped 1-frame, 2 frame and 3-frame nuclei to various parts of the United States; many as far east as New York State and as far north and west as North Dakota and Minnesota. If any ever failed to reach their destination in perfect condition, the fact was never reported to me.

In packing nuclei for shipment, I have used the ordinary nucleus shipping cage as sent out by our supply houses, and a cage that I make myself, with equal success. The cage I make differs from the factory-made cage in that the ventilation is provided at both sides instead of the bottom and top as in the factory-made cage. If three or more of my cages are shipped in one parcel it is necessary to space them an inch apart for ventilation, while the factory-made cages may be crated closely together. My cage has solid bottom and top. A piece of wood with notches to accommodate the bottom-bars of frames is nailed in the bottom of the cage, about the middle.

The frames are put in place, a piece of wood ⅜x½ inch is laid across the frames at each end and lightly nailed. This ⅜-inch piece comes flush with the end-piece of the cage, so the cover holds it firmly in place, and it in turn holds the frames in place, preventing them from bouncing up and down. Three light nails, such as are used in nailing up frames, are driven through each end of the cover into the end-piece of the cage. Side pieces come up flush with the top of the cover and are nailed to it with about three or four nails on each side. A light rope handle is attached by nailing and stapling each end of the rope to each end of the cage. One rope is sufficient for a crate of five or six nuclei. A request, "Keep out of sun," and "Pile nothing on this hive," is stenciled on the top of one cage in each crate.

I think the kind of cage used is not very important, just so it provides ventilation for the bees, holds the frames in place, prevents the escape of the bees and is light, so as to avoid excessive transportation charges.

The important thing is what goes into the cage to form the nucleus. I take it that my customer wants a start of bees, and I put in enough bees, brood, etc., to start quite a prosperous little colony from the start. If it is only a 1-frame nucleus, I select a comb fully half filled with sealed brood, some empty cells, and enough honey to last the nucleus to its destination and some over to help in starting brood after arrival. The empty cells are filled with water, and about as many bees shaken into the cage as are sufficient to well cover both sides of a Langstroth frame or comb. This, with the brood that will soon hatch out, will make quite a prosperous little colony. In a 2 frame nucleus I place the equivalent of about 1⅓ frames of sealed brood. The other two-thirds of a comb should be about half honey and the other half filled with water. In practice, the honey will be at the tops of the frames and empty cells at the bottom, which I fill with water.

A 3 frame nucleus may contain one frame entirely filled with sealed brood which I place in the center of the cage, and the other two combs should have about an inch or an inch and a half of honey at the top, and the balance of the combs about equally divided between sealed brood and empty cells to be filled with water. Enough bees are put into all nuclei to well cover both sides of all combs. In actual practice it is not always possible to find combs with brood, honey and empty cells arranged in any certain way, so these statements must be understood to indicate the amount of those things I use rather than the arrangement of them. The amount of honey may vary with the distance the shipment is to go, always bearing in mind that my customer may be an amateur, and not know what to do with hungry bees, so enough honey is included to carry the bees to their destination and some over to enable them to recover from the shock of shipment and make their start at brood-rearing.

If a queen is to accompany a nucleus, she is caged in a provisioned three-hole cage, nine attendant bees caged with her and the cage pressed in under a comb between the bottom of the comb and the bottom-bar, wire cloth side up, and the candy-hole against an end-bar to prevent the bees from releasing her before the shipment is delivered. Instructions are given to the customer how to let the bees release her. If, from any cause, the queen is released *en route*, there is no real damage done, but I like to have my customer able to find the queen, which he may not be able to do if she is out among the bees. Care is taken to place the cage where no water will jar out of the combs into the queen-cage.

As I have never had any failures I may not be in a position to point out the elements of success; but the points I regard as important are shipping nothing but sealed brood, plenty of bees, plenty of honey to carry to their destination with some left over, and plenty of ventilation, using only combs that have had brood reared in them for at least a year or two so as to make them tough, and those combs built from a good grade of foundation in wired frames.

Mathis, Tex,

J. E. CRANE

The Flight of a Bee

BY J. E. CRANE.

HAVE you ever stopped to inquire how a bee flies? Why does it have four wings when a fly has only two? How can it fly backward as well as forward? Bees are governed by physical laws and are controlled by them as well as larger animal life. In these days when man has learned to navigate the air it is of special interest to inquire how the bees are able to do so and their wonderful adaptation to their out-of-door life.

We see the need of four wings in place of two, because they can be quickly hooked together for flight, giving them a larger wing surface, for they have not only to carry themselves through the air as a fly does, but they have to carry heavy loads of nectar and pollen. When entering the hive the wings may be separated and folded in a small space so as not to interfere in their movements in the hive or in entering the cells.

Have you ever noticed the strong rib at the front of the forward wing, which appears to explain the secret of the bees flight? If the wings are united and their surface parallel with the body of the bee, we see how with wings thus spread they go through the air with little exertion. Then if the wings are turned so their surface be at right angle to the body and quickly forced backwards we can readily see how the body of the bee will be forced forward, just as a small boat is pushed forward by the oars. If the wings when spread are forced downward, or upward, or forward, the body moves in the opposite direction.

Have you ever seen a bird fly backward? Think quickly, "No!" "Yes!" There is the humming bird; have we not seen it fly to a deep-throated flower to get a sip of nectar, or perhaps a choice tit-bit of insect and then back out and rising an instant in the air to see who is watching, dart away? Evidently the flight or wing motion of these tiny birds is much like that of the bees, and so we call them *humming* birds.

Have we ever stopped to think of the number, variety and power of the muscles required to produce the varied motions of the four wings in the flight of a bee? Have we ever thought how these powerful muscles are enclosed in a little somewhat globular case, the thorax, but little more than one eighth of an inch in diameter, already occupied with the muscles required for the movement of the six legs of the bee? Have we ever thought of the rapidity of their movements? Not far from 40 miles an hour, with 500 vibrations of the wings each second it is estimated. Have we ever inquired what sustains such energy? What kind of food can they use to give them such power? We surely get a new idea of the value of honey as food when we notice what it does for the bees, how it sustains them during long flights, perhaps over hills and against a heavy wind, while carrying half of their own weight of honey and pollen. We can realize something of the muscular energy required for such flights when we see the bees drop on the alighting-board panting for air and stopping to rest before they enter their hive. Again we learn something of the exhaustion of such flights from the rapid loss of bees or the decrease in population of a hive when no young bees are emerging.

We have sometimes found the bees in a new colony to decrease from one-half to two-thirds in three weeks. This is more noticeable if honey is scarce or the bees have to fly a great distance to find it. I have many times found it a decided advantage to give such colonies, a few days after hiving, two or three combs of emerging brood that young bees might take the place of those that have worn themselves out and died.

It is interesting to note how bees are guided in their flight. Birds have tails to assist them, and boats have rudders, but bees have neither; consequently bees have to guide their flight by their wings much as a man in a row boat guides it by his oars, one a little faster or slower than the other when the direction is changed. As a result the flight of bees is not as accurate as we have sometimes thought, and a bee line is not a straight line. If we stand upon a little eminence or hill with the bees coming toward us in the late afternoon, we may see them for a long distance and observe their flight with ease. We can see how a bee flies first on one side of a straight line and then on the other. It would seem as though they set their wings as nearly as they can for a straight line, but are not quite accurate and are carried to one side; then change their flight to correct the error which carries them to the other side of the line, thus making their line full of gentle waves.

It is interesting to note the intelligence bees exercise, in flying, to save their strength. If it is windy they fly low where the vegetation or other objects obstruct the wind to some extent. Or they may keep in the shelter of a fence or a forest, although the distance to travel is farther. They have been known even to go around a hill when they knew the way rather than over it, because it was easier; their instinct teaching them how to save the hard labor of climbing the hill. Their instinct, if it is instinct, seems to serve them even better than the reasoning powers serve man, for we have found roads laid out over hills when it would have been no farther and much easier to have laid them around the hills.

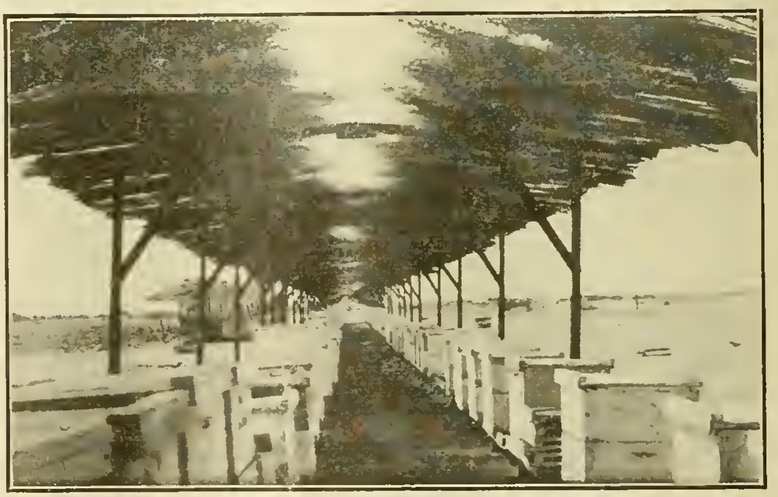
Middlebury, Vt.

Beekeeping in the Imperial Valley

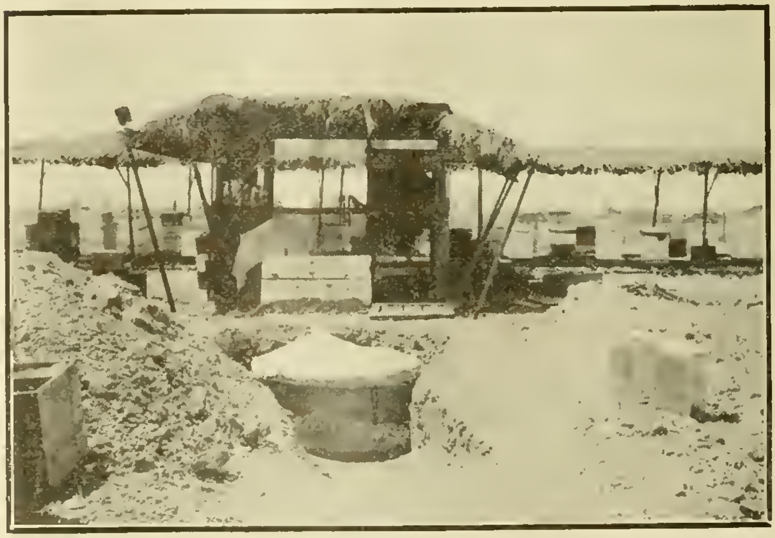
BY HOMER MATHEWSON.

IMAGINE yourself in a level country, a valley situated in southern California, about 150 miles long by 50 wide, and the greater part below the level of the sea, the lowest point being 268 feet. At some period in ages past this was a great inland sea.

In this country the annual rainfall is



NO. 1.—LOOKING DOWN THROUGH A "RAMADA"



NO. 2.—THE REAR OF THE EXTRACTING HOUSE WITH HONEY TANK IN THE EXCAVATION

less than two inches, and there are no fogs, yet there are miles and miles of water (irrigation ditches). Here the snow never falls; during the months of December and January some few frosts occur, sufficiently severe to kill most tender plants; ice on still ponds sometimes reaches a thickness of one-eighth inch.

During the months of February and March there are strong winds, corresponding to the March weather in the East. In April it grows warm and soon becomes what the cotton planters call cotton weather, *i. e.*, warm days and nights. The heat is never broken by *cold snaps*. This continues for some three months.

During August the thermometer often reaches 120 degrees in the shade, but the extremely dry atmostphere causes the sensible heat to resemble that of 90 degrees in the eastern States.

No. 3.—Cans Filled Ready for Shipment

In midwinter and again in midsummer one or more light local showers may be expected; during the season of 1916 no rain of importance fell from February to November.

This industry came with the early settlers, in the year 1900. Among the first were Henry Perkins, J. W. Huff and a Mr. Jones. Mr. Perkins had the honor of shipping the first car of honey from the valley. Among the successful men of today I will mention J. W. George, W. W. Fairchild, J. W. Huff, D. O. Page, M. S. Phillippe, L. Logan and F. J. Severin. These men may be styled "Men whom the bees keep."

SPRING MANAGEMENT.

The successful man has learned to prepare for the year's harvest the fall previous, by inducing late breeding, thus having a large percentage of young bees for the winter. Such management, in a measure, prevents "spring dwindling," and gives a larger number of workers to begin the harvest.

SOURCES OF HONEY.

Pollen is gathered as early as January from cottonwood and wild hollyhock. Sometimes as early as Feb. 18, some honey is gathered from the wild hollyhock. This may be called the first stimulation. It is followed by arrowwood which furnishes a fine flavored honey; many think it adds to the flavor of the early alfalfa. In some locations where willow grows it furnishes a fair flow for a limited time. The great fields of cantaloupes furnish some honey, the flow from this source lasting about a month.

About May 18, the flow from alfalfa commences and lasts through May, June and into July. The flow is slow but of long duration. Oftentimes when conditions are favorable, when nights and mornings are a bit humid, the bees simply "roll in" the honey. In normal years there is often a short flow in September. An operator is able to work but two yards, and he needs to hustle to do even this. Many of the beekeepers say that cotton furnishes honey, the long staple variety being the best. Nearly every town in the valley has its gin, and there is an oil mill. I predict that the cotton interests will increase. At present there is no boll weevil, and such perfect weather to harvest the crop.

GENERAL CONDITIONS.

The acreage of alfalfa is on the decrease, that of cotton and corn on the increase. The growing of cantaloupes has been on the increase, and from this source some honey is produced. For the past two seasons there has been a shortage of water during July and August, caused by the ditches silting up. The alfalfa is allowed to dry out and the little water available is used on cotton and corn. Many of the beekeepers complain of the cold winds in the spring retarding brood-rearing.

Summing up it would seem seem that the acreage of alfalfa was at least 30 percent less than formerly, that the flow from cotton and cantaloupes does not make up the deficit, and the honey crop has fallen off in the last three years from 30 to 50 percent, yet the market price has increased. The bulk of the crop is marketed in Los Angeles and other coast cities. The color of the honey is not so light as that of Nevada or Colorado. The extreme heat might be a small factor.

CROPS.

Very little comb honey is produced, and none shipped; extracted has in past years sold as low as three cents, yet this season the average is near 6½ cents. From 30 to 40 cars are shipped annually; beeswax sells around 25 cents. A foreign buyer is reported to have bought nearly all available supply in the valley.

DISEASE.

Disease has appeared, yet it is well under control, only a few apiaries hav-

NO. 4—LIVING QUARTERS OF A BEEKEEPER DURING THE HONEY SEASON

NO. 5.—VIEW OF THE APIARY FROM A DISTANCE

ing any trouble, and by the aid of the stringent law in force it is hoped that the situation may grow no worse. There are many drawbacks, drone layers, mismating, robbing, poor pasture, cranky neighbors, who make all manner of foolish demands, the person who seems to think that "God helps him who helps himself," thieves, they are well represented. I might name others, yet if a man is of the "Johnny on the spot" order, he can stand all at a small loss.

YARD EQUIPMENT.

Assuming that you have the bees, the next accessory is a *Ramada* or shade for them. It consists of a framework of wood over which wires are drawn, and then a layer of arrow-wood across with a second set of wires on top to keep the wind from blowing the covering off. The hives are arranged in rows and the operator works between the two lines. Figure 1 shows the general form of a ramada, end view. Figure 2 shows the rear of an extracting house, with honey tank sunk in the ground, with a side view of the ramada also. Figure 3 shows an extracting house, tank, a lot of filled cases and a pile of empties.

The bee-men in charge often live at the yards, and many unique structures they build. Illustration No. 4 shows a house with a sleeping room and kitchen. Some of the beekeepers in the colder States might think it somewhat limited, yet it is very comfortable. It consists of a frame work covered with mosquito netting and a cover of arrow-wood to keep the sun off. Figure 5 shows a general view of a yard from a distance. Figure 6 shows a yard where all hives are covered by two thicknesses of burlap sacks, as a protection from heat. Figure 7 shows a yard a model for neatness and arrangement, everything being in its proper place.

The prefence is given to the 10-frame size, yet a few of the 8-frame are in use.

NUMBER OF COLONIES.

It is estimated that there are more than 20,000 colonies in the valley; some think as many as 22,000. With this number of colonies and the existing conditions, the valley seems overstocked, and I would not advise any one to go there for the purpose of beekeeping without first investigating. Very soon more land will be watered, and if it is sown to alfalfa there will be a betterment of conditions.

PESTS.

Alfalfa is seriously damaged by the ravages of grasshoppers which have appeared in great numbers; another pest is the yellow alfalfa butterfly (*Eurymus eurytheme*), which is so common that the county is furnishing the farmers poison in an attempt to eradicate it. Bermuda grass is another pest. The seed comes in the irrigation water. Getting a start in the fields it overcomes the alfalfa. It gives some feed, but is not nearly so good as alfalfa.

INCREASE.

Increase is made usually by division, letting the divisions rear a queen from their own brood. Some think that the queens shipped in do not do as well at first as those of local production, a climatic condition I infer.

There are no queens bred in the valley for market. Many rear their own, and requeening is done soon after the honey flow, which may be August or September. Many think that it is not best to try to rear queens at the warmest part of the summer, claiming that the heat affects the vitality of the drones, thereby causing a great percentage of drone layers, a condition found only too often.

A large percentage of the better beemen requeen as often as every two years, and many every year. The fame of the Imperial honey has traveled far and wide, and dealers from everywhere are looking here for honey, many having orders they cannot supply.

Lexington, Ky.

Marketing Honey

BY A. F. BONNEY.

A PERSON does not have much of a show when contending with the Editor (a big E please), but the American Bee Journal has treated me fairly by printing some of my "stuff," so I shall again try to reach the public eye with something about selling our sweet product.

In the American Bee Journal for December, Mr. Pellett (page 414) suggests that "Honey is, toward glucose and all corn syrups, in the same relative position as butter is placed toward margarine. Yet butter is not neglected for margarine as honey is for glucose," meaning, of course, glucose compounds.

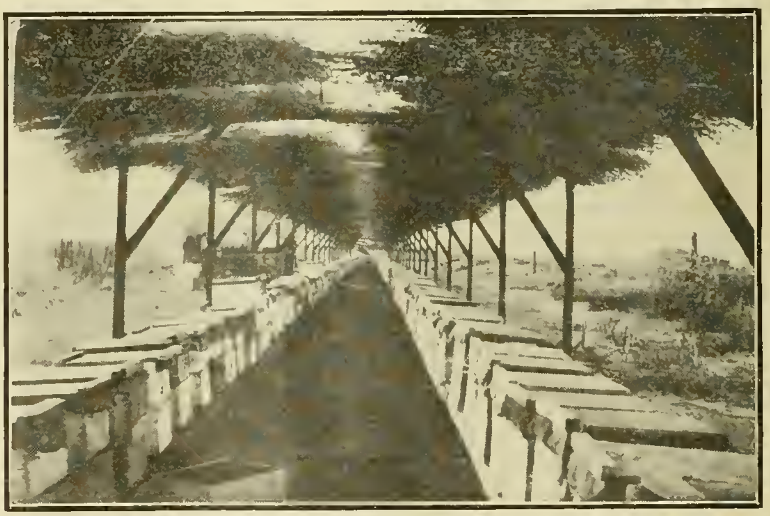
Mr. Pellett having had legal training, is a specious debater. In this case, however, while sincere and earnest, he is, I think, mistaken. Honey is not in the same relative relation to glucose compounds as butter is to oleomargarine compounds, generally called "imitation butter, butterine," etc., for there are stringent legal enactments regarding the use of oleo compounds intended for consumption as butter substitutes. There is a small tax on the sale of *uncolored* compounds, but a tax of *ten cents a pound* on the colored stuff. There is nothing of the kind regarding honey, and until the pure food laws were passed any one could adulterate honey all they chose, while laws regarding the butter imitations have been in force for a generation, I think.

Butter does come in competition with the oleo compounds, for each and every packing house makes millions of pounds of butter imitations annually, and honey will not have the protection butter has (while some of it is strong enough to protect itself) until honey producers are as numerous as farmers who send out butter in tons instead of pounds, as we, relatively, do honey. I have not the figures by me, but I know that the money value of butter in the United States runs into the hundreds of millions of dollars. The value of the honey crop will not reach $50,000,000.

Of late years "butter substitutes" are more in demand than the straight oleomargarine, which is "a granular, solid fat produced from the leaf-fat of cattle." The pure oleo was at first salted, colored, and sold to take the place of butter, but the grain, perceptible in the mouth, betrayed it, so the manufacturers soon began making a mixture of oleo, cotton seed oil and pure butter, which did away with the grain, and this imitation of butter is so good that wife and I prefer it to the uncertain butter we are able to buy in a "country" store where we should be able to get the best.

Mind this. Oleo compounds, imitation butter *is sold* to take the place of butter on the table. It looks like butter, smells like butter and tastes like butter, so much so that I defy any one to tell the "butterine" I use from good creamery butter, particularly if it be colored, and the user can color it himself with little capsules of butter color packed with the butterine.

With all due deference to the Editor, there is no such relation between honey and corn syrup compounds. These masses are mixtures of artificial glucose—made of corn starch and sulphuric acid—and cane or beet sugar syrup in the proportion of 90 percent glucose to 10 percent sugar syrup. There is so little sweet in them that a person may eat large quantities without surfeit, and I have seen children pour ounces of the stuff on a cake and eat it. There is no question in color, and the corn syrup does not take the



NO. 6.—BRAN SACKS ARE USED OVER HIVES TO PREVENT EXCESSIVE HEAT

place of honey, as honey was not generally used before glucose was discovered, as butter was used before oleo was made. Moreover, so surfeiting is pure honey that if the glucose compounds were not available, sugar syrup would be used, as it was generally when I was a boy.

I want to impress it on the minds of my readers that I am writing for honey producers, not the laity. Not one in ten thousand non-producers of honey will see this, and that is why I reiterate that while I like honey I do not want it every day. The same with maple syrup, common and cheap when I was a boy, which I tired of quickly and went back to the syrup mother used to make of "C" sugar, I think it was, a light brown and a very sweet article. My next delight was "New Orleans molasses." Gee! but it was good! Honey is so rich and sweet that it is cloying, and while it is a predigested food, or partly so, is apt to disagree with some stomachs, so that, as sellers, our last condition is worse than our first. We have lost a customer. I honestly believe that were we to advise people to mix a thick, warm syrup half and half with honey we should see largely increased sales. I have even thought of putting such a compound on the market, but there are many reasons why we should not, though while it would not *cheapen* honey it would no doubt largely increase its consumption.

Oleo compounds, "butterines," take the place of pure butter on hundreds and thousands of tables, public and private, and here is something else to show Mr. Pellett's error: If a public place, even a popcorn "stand" uses oleo compounds a sign of specified size must be posted, "WE SERVE OLEOMARGARINE HERE." As corn syrup compounds compete with honey and pure sugar syrup, very common in the South, while they are a substitute for nothing, the users cannot be compelled to put on such a sign or anything similar while we may sometime be able to induce hotel men and restaurant keepers to post signs IOWA HONEY SERVED HERE, or PURE HONEY SERVED HERE. For next year's honey advertising experiment I am going to start a campaign with hotel keepers to use a card or a sign to read: BONNEY HONEY SERVED HERE. (What would the world do without BONNEY HONEY?) If others would do the same for their product it might greatly increase the consumption of our goods. BUCKWHEAT CAKES AND HONEY TODAY, would look good, while a small individual cream jug of the sweet would fill the bill.

NO. 7—APIARY OF F. J. SEVERIN, A MODEL OF NEATNESS

The marketing of honey was pretty well discussed at the last Iowa Beekeepers' Association in Des Moines, and to my mind this was demonstrated: Each man must dispose of his own stock, locally, by retail if possible, or at least to the stores, and it were vastly better for him to sell at 8 cents to local trade than 7 cents to some jobber, while there is no reason on earth why 10 cents cannot be made the minimum price in Iowa for large quantities, and better prices for mail containers. One of the best things I ever hit on was a an advertisement in local papers: BRING YOUR OWN CONTAINERS AND GET BONNEY HONEY FOR 10 CENTS A POUND. One man brought in 20 quart Mason jars. He remarked: "I would have brought in a big can, but I thought I had to have the jars." He paid me $6.00, and I was ahead the price of a 60-pound can.

This, of course, calls up the question of advertising, but for small towns this is a simple matter, a sign conspicuously displayed, HONEY FOR SALE, in connection with a good label is all that is needed. When one goes to branching out it calls for more printer's ink, but if in a town of 300 to 500 and the adjacent countryside a man cannot dispose of several thousand pounds of honey at a cost of a fraction of a cent per pound for printing, there is something wrong. In most county seat papers an advertisement an inch deep by one column wide can be had at about 15 cents per week or 60 cents per month, and it would be very strange indeed if the bill could not be paid in honey. Considering the work necessary to send out cards and circulars, the newspaper is, probably, the cheapest form of advertising we can get. Addressing thousands of cards and envelopes and folding circulars is no small task. As a circular or card is read by not much more than one person, and a newspaper advertisement by one to five persons, the paper has the larger circulation. If "local" advertising is resorted to at about 5 cents a line, practically every reader of the paper will see it.

As to prices, honey producers are foolish and unwise. Actually, HONEY is the ONE THING which has NOT INCREASED IN PRICE in the past two years. This is almost unbelievable, but at our association meeting a member got up and declared that 7 cents was a fair price for honey. True, he later said 20 cents was a fair price, but the damage was done, as a reporter was present and his nimble pencil got the 7 cents. He was not present when the 20 cents was quoted. The gentleman was talking from the jobber's standpoint, as he handles large quantities of honey annually. I hope to live to see the day when white clover honey will bring more than 7 cents per pound. If I do I shall see it sold without the aid of the middleman. Sixty percent is now sold locally, according to government reports. If every one will try to sell locally, or at least without the aid of the jobber, we can average a fair price for our surplus stock.

It is claimed that the low price of honey is due to the fact that it is a "luxury." Well, ice cream is a luxury, more so really than honey, yet the people of the United States last year spent ONE and A HALF BILLION DOLLARS for ice cream. The soda fountains made it possible for one thing. While our raw material costs us nothing theirs costs dollars, yet we sell less than $40,000,000 worth of honey. Forty million dollars compared to ONE AND A HALF BILLION. How may we explain it?

One great error has been fastened onto us, owing to the fact that if comb honey is not sold by Christmas, it is apt to granulate. Honey producers have for a generation or more been urged to get rid of their crop early. It seems that producers of extracted honey are so imbued with that idea that they are in a panic to sell at any price. Mr. Root told us in Des Moines of a case this year where his firm was offered some perfectly good white clover honey at 5½ cents a pound. I refused an offer from them of 7¼ cents f. o. b. Buck Grove, but then it was Bonney honey.

Buck Grove, Iowa.

Dear Bonney:—I did not say that butter and oleo, and honey and corn syrup sustained the same relation in the sense that you give. What I said was that because of the organization and interest of the dairymen there are laws regulating oleomargarine, and this same agitation has made a strong prejudice against oleo. On the other hand, the beekeepers have slept quietly and allowed the corn syrup fellows to take the syrup market without acquainting the public with the superior quality of their product. I did not attempt to make any other comparison. I only tried to show that the same prejudice against glucose would have existed if the same effort had been made. If you were a lawyer instead of a doctor you would not need a translation. However, if you get by the Editor it is all right with me. FRANK C. PELLETT.

[Evidently the misunderstanding comes from my having quoted Mr. Pellett in the manner mentioned by our old friend Dr. Bonney, for this matter on page 414 is of my own writing. As they are both good-natured in their banter, the reader will enjoy it, for the question of margarine *vs.* glucose is interesting in their relation with butter *vs.* honey.—EDITOR.]

Bees in Banks

BY BURTON N. GATES.

THERE seems to be a current of simultaneous originality among banking concerns in the use of honeybees as an advertising medium. The American Bee Journal in November, page 387, shows the window display of a Chicago bank wherein bees are used to typify those desirable saving qualities which should be cultivated by the human race. As this display attracted large crowds of interested spectators, so a similar bank window attracted thousands in Springfield, Mass., during the National Dairy Show Oct. 12 to 21. This neat display was made by the Commercial Trust Company, the material being furnished by A. H. McCarter, of Springfield.

One emphatic lesson taught is expressed on the card in the show window, "Take a lesson from the honeybee. Store up a little something each week in this bank for the future." Elsewhere in the window display were numerous home-saving safes which were linked to the general exhibit by this legend, "These little banks are to you what the honeycomb is to the bee. One dollar opens an interest account here." Another legend is, "An example for you, the bees believe in preparedness."

The bank also cordially inserted a card advising those interested in bees to visit the Massachusetts Board of Agriculture display of beekeeping materials, honey and bees, at the State Building on the Exposition grounds, where the National Dairy Show was held.

Amherst, Mass.

When to Requeen

BY F. M. PERRY.

I WOULD not requeen in proximity to the main honey flow, whether it be just before, just after, or during the flow. Before or during the flow the colonies are populous, queens are hard to find, and no colonies would have their honey production increased by bees hatching from the new queen later on.

After the honey flow is the better time, though this tends to increase the strength of colonies after the need for bees to gather is past. Besides the chances of the queen being killed in introduction are greater. The beekeeper also runs the risk of loss of some good queens during winter and before their qualities have been tested.

The foregoing applies of course to queenright colonies. Queenless colonies should be requeened as soon as found.

But the best time of all to requeen is early in the spring. Why? First, because by putting a good queen in a colony that has a poor one, or only a medium one, two months or more before the honey flow, the beekeeper gets a good force of workers, quite often double the number he would have had with the old queen, and so a larger crop of honey. Second, you still have the young queen of improved strain with which to improve your stock later, if desired; and third, you can make the introduction when the old queens are easily found, and when nearly every queen will be accepted.

Then, another thing, you can test your queen for the honey-gathering qualities of her bees, for her breeding ability, and the gentleness of her workers, within so short a time that you can be sure that any defect that may show is in the queen herself.

A large amount of honey goes ungathered every year, because the poorest colony is not as strong as the best. Why not have them all best? It is an old saying among beemen, that the colony that gives the big yield this year will not do much next year. Why? Is it not because the queen has done so well that the bees do not see the need of superseding her at the end of the honey flow? It is not the number of bees you have in the apiary, but the number you have in each colony that counts when you come to the main honey flow. Bradentown, Fla.

CONVENTION PROCEEDINGS

Queen-Rearing for Northern Latitudes

The results of a very interesting series of experiments in queen-rearing at the the University at Madison, Wis., was reported in a paper read by Mr. C. W. Aeppler, at the Wisconsin meeting. Mr. Aeppler is specializing in bee-culture at the University, and had charge of the queen rearing last summer.

In the North the same methods of queen-rearing as in the South will not apply owing to the climate. The nights and even the days are cool up to June 15, and even later. Mr. Aeppler found that the Doolittle method of having cells built was not so successful for him in early spring as the Alley or Dr. Miller methods.

CHOOSING THE CELL-BUILDERS.

Not all colonies are equally as valuable as cell-builders. Out of 50 colonies only six proved good cell builders. Of these, two were especially valuable for the proportion of cells built. Both of these had queens of the previous August, and both were reared from the same mother. His conclusions were that the cell-building colonies should be carefully chosen from colonies having young and vigorous queens. This would also minimize the attempts at swarming of such colonies.

MANAGEMENT OF CELL BUILDERS.

The colonies chosen were stimulated both by feeding and by the addition of sealed brood to get them as strong as possible. When ready to have cells built, all of the sealed brood and most of the bees were placed in an upper story with a queen-excluder between. Between the upper and lower stories was also placed an escape-board, partly of screen wire, with the escape opposite to the usual method, so that the bees could go above, but none go back. The object of the screen is to give the bees above as much warmth as possible, while Mr. Aeppler finds that with the escape placed as indicated, he gets a few young bees to go upward and help strengthen the colony.

The entrance of the cell-building upper story is a one-inch hole on the back side of the hive. This allows the old bees to return at once to the old front entrance, leaving only young bees in the cell builder. The small entrance also helps retain the warmth and prevents robbing. Mr. Aeppler stated that often the bees would cluster all over the back of the hive during cell building.

Both stories were fed stimulatively when necessary, with an Alexander feeder, and more sealed brood was continually added to the cell builder as the season advanced. Cells were readily accepted in any kind of weather.

THE CELL CUPS.

Experiments were made with different sized artificial cell-cups, and on a large number of colonies. Cells seven-sixteenths of an inch in diameter and three-fourths to one inch in length were the most readily accepted and most promptly capped. This is the cell-cup size before being given to the bees for 15 or 20 minutes for polishing before inserting the royal jelly and eggs.

COVERS FOR CELL BUILDERS.

The hive cover for all cell-building colonies is made in sections so that the frame of cells may be placed or removed with as little disturbance to the colony as possible.

Cells are left in the cell builder for about 24 hours, when they are placed in other colonies for finishing.

NUCLEI.

No success was had with baby nuclei. Mr. Aeppler now uses regular 10-frame hives partitioned off to make three nuclei with entrances on different sides of the hive. Thirteen to 20 cells are given to each colony. At least 90 percent of the cells given are accepted.

We quote an interesting passage verbatim, concerning the greater or less readiness of bees and other beings for rearing their young:

"The number and value of the queen-cells that can be secured by the beekeeper depends entirely upon the cell builders. This is the writer's conclusion after two years of experimenting on this particular point. We have all noticed that some mares will nurse a colt better than others; that some cows treat a calf kindly and will nurse it, whereas its own mother will not; that a certain brood sow can nurse 12 pigs better than another will nurse six. It is a question of individuality and behavior. We have the same conditions present in queen-rearing. Not all colonies are cell-builders. One will accept a batch of 20 cells and complete them all; another may not accept ten. It is up to the beekeeper and queen-breeder to determine to some extent at least which colonies it will pay him to use as cell builders, the same as it pays the breeder of swine to determine which shall be his brood sows and and which shall go to market.

"It is a business sense that prompts such action. We must specialize in order to succeed best. It is quite as easy to start 100 cells and have 90 completed as it is to have only 25 completed. As it takes time to make the wax cell-cups, secure royal jelly, and graft larvæ, one should endeavor to get maximum results. To use the words of David Rankin, 'Make every seed, every second, and every cent count.'"

The Missouri Meeting at Columbia

During the year 1916, the editor attended 17 different beekeepers' meetings, besides declining a half dozen invitations, which it was utterly impossible for him to accept. He resolved to retrench for 1917. But so urgent a letter was written him by Dr. L. Haseman, Entomologist at the University of Missouri, that he broke his resolve Jan. 3, and went to Columbia.

This was Farmers' Week at the Missouri University, and some 1500 farmers had availed themselves of the opportunity to get information. The train on which the Editor reached Columbia, after 7:00 p.m., was carrying about 300 visitors. He was promptly informed that the hotels were all full, as well as the boarding houses, and that the only chance for a bed was through the efforts of the Business Club, who was directing the stranded visitors to the homes of hospitable citizens. Our Editor appears to be a lucky man, for he is always properly cared for. This time, he was given a room in the fine home of the mayor of the city, Mr. J. M. Batterton. If the hospitality he enjoyed is a sample of Missouri hospitality, that State must be put in the front rank for kindness to strangers. Reader, did you ever stop to think how many good people there are in the world, if you could only know them? The acquaintance made during this visit will not be readily forgotten.

The meeting of beekeepers was attended by only 30 to 35 persons, mostly beginners. But it was splendidly conducted by the president, E. E. Tyler, assisted by Dr. L. Haseman, Entomologist, and Messrs. A. H. Hollinger, Thos. Talbert, K. C. Sullivan and Harold Fort. Our old acquaintances, R. A. Holekamp, J. F. Diemer, Gladish, Sr., Nebel, and other experienced apiarists were in attendance.

A splendid exhibit of the "evolution of the beehive" was furnished by the managers. From the old straw skep, through the "gum," the first patented hives, the original Langstroth, the Heddon, Danzenbaker, Jumbo and latest dovetailed hive, most of the modern changes were represented. A hive of bees, under a screen cage, gave opportunity for demonstrations each day. Fine honey was also shown. A very much magnified section of a worker-bee, showing all the internal organs, gave Dr. Haseman great help in his descriptions of the anatomy of the honeybee.

The spraying of fruit trees in connection with the possible poisoning of honeybees was treated by Dr. T. J. Talbert. A short synopsis of this valuable essay will be inserted in our April number. Mr. Talbert's conclusions are that if spraying is done at the proper time and with the proper mixture, there is no danger whatever for the bees.

An address by Miss Louise Stanley, instructor in Household Science, on "Uses of Honey on the Farm," urged strongly the substitution of honey for sugar in many things. Miss Stanley quoted mainly from the Farmers' Bulletin No. 653 of the United States Department of Agriculture, which may be had at Washington, D. C., upon request.

A most interesting essay, by a very interesting man was "Why Some Beekeepers Fail," by H. B. Parks, Biologist at Palmer College, Albany, Mo. Mr. Parks promised us a synopsis of his essay for publication.

It is out of the question to speak of all the interesting matters discussed at this meeting. The beekeepers of Missouri are to be congratulated in having such lively interest taken by the Entomological Department of their State, and they should give this work their hearty support, by attending the meetings of the Association.

On the last evening of Farmers' Week a banquet of 900 covers was given, in which the department of beekeeping had furnished honey for every table. At that banquet, the greatest need of Missouri, good roads, was emphatically discussed. The world is moving in the right direction.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Foulbrood Experiences of a Beginner

I will tell of my experience with the little busy bees, as they have been so interesting and given me so many, many hours of pleasure; but if it had not been for our State apiarist, Prof. F. Eric Millen, my beekeeping would have been of short duration.

For several years I had wanted bees on account of the fruit; but spring after spring would pass, and still I would not have bees. Finally there appeared this advertisement in our town paper last April: "For Sale—Eight good healthy swarms of bees." I bought the bees and all the old beekeeper's paraphernalia. In a few days I learned that the bees were diseased, but the party giving the information would give no more, not even the State apiarist's name, but "closed up like a clam." I am glad he did, and I am glad I ran into this trouble at the start.

I wrote, addressing the letter to the State Inspector of Apiaries, Lansing. By return mail came a letter from Prof. Millen, saying he would be in my locality and would call in a few days, which he did, and after examining each colony said they had foulbrood, but thought, by treating, they could be saved. This he did June 10, and such a transformation in a couple of hours. They were shaken from the old hives, some of which dated back 25 years, into new double-walled hives all neatly painted, and on painted stands. A bonfire soon consumed the old hives, brood-frames, and all the old paraphernalia. Prof. Millen reduced them to six colonies, and clipped the queens wings.

The neighbors, learning that I was interested in bees, would telephone if they found a swarm, and so the season ended with 14 colonies.

On Sept. 15, Prof. Millen again examined the colonies and introduced Italian queens. At that time he advised extra feeding, which was given. The chaff trays were put on early in November; they are being wintered outdoors without any further protection, other than being in a secluded spot with buildings to the north, and buildings and a high closed fence to the west.

On Jan. 27, they were as active as on a day in the fall, and what greatly interested me was to see the little yellow bees around each entrance, which I hope proves that all queens are alive.

A. S.

In the Eucalyptus Country

I am sending a sample of eucalyptus honey, which is just as pure as you will get, I believe. The forest is about 500 feet from the hives. It commenced to bloom in November, and was the only thing in bloom when the bees began to work, which was Jan. 3, 1916.

I am enclosing two views of my places after the box-hive time. I bought 24 8-frame hives, and found the colonies swarmed when the hives were full, so I tried 10-frame hives and supers. Now I put all the ten frames for brood-nests with all the shallow frames above early, then the 8 frame bodies later, as it is easier to lift them. I have added queen-excluders and blocks under the hives. I try to keep to 25 colonies, and bless Dr. Miller for the paper uniting plan. By blocking a part of the entrance and taking off the full and half supers they are ready for our winters.

[Mrs.] Lucy Sexton.

Goleta, Calif

Thanks, Mrs. Sexton, for the liberal samples of eucalyptus honey. It is indeed interesting to sample various honeys from different sections of the country. Each sample has a different taste, some mild and some strong.

This honey is amber, of excellent

body, well ripened even to stringiness, with a flavor that can be described only as eucalyptus flavor, which of course means nothing to one who has never tasted it. Those who prefer honies of light color are not likely to approve of it; those who like the darker honies may. In Australia, the home of the eucalyptus, the flavor is highly esteemed, and Australian beekeepers cannot understand why eucalyptus honey does not class with the best in London, where they have been anxious to establish a market for it. Some years ago a leading beekeeper of Australia brought to our place samples of several different kinds of eucalyptus honey, which varied no little. This California sample would probably rank with the best of the Australian.

Those are fine views. With everything in northern Illinois covered with snow, and the thermometer for days playing about the zero point, it takes some imagination to fancy one's self sitting under those palms. The other picture awakens awe at the grandeur of the sight, and it would be fine to be there to work with the bees, but to live there the year around would seem a rather lonely thing, for it doesn't look as if neighbors were very plenty.

You are right in liking the newspaper plan of uniting. It is so effective, so successful, and so little trouble. Just put a sheet of common newpaper over the top-bars of one hive, set the other hive over that, and you may trust the bees to do their own uniting; first gnawing a very small hole through the paper, and uniting so gradually that there is no fighting. You can put all the brood of both stories into one story in three or four days, taking away the paper, but if you forget them for two weeks or more it will not matter. They will tear the paper all out and carry it outdoors. One thing that is no small advantage is that after the imprisonment in the upper story, the bees will not return to the old stand as they would if not thus imprisoned.

MISCELLANEOUS NEWS ITEMS

Government Bulletin on North Carolina Beekeeping.—"A Survey of Beekeeping in North Carolina," is the title of a 16-page government bulletin written by E. G. Carr, of New Jersey, who made a survey of conditions in that State from Oct. 1 to Dec. 22, 1915 under Dr. Phillips' Bureau of Bee Investigations at Washington. Unfortunately Mr. Carr's survey covered only a portion of the State.

North Carolina ranks fourth among the States for number of colonies with a total by the census of 189,178 colonies. She ranks eleventh in value of bee-products ($230,586). A large proportion of the bees are German or black bees, and are kept in log hives or gums, which are either placed on log benches or flat rocks. Most gums are kept in thick shade for fear of melting combs, much of which could be averted by better ventilation.

Swarming is uncontrolled generally, resulting in reduced crops, and in much loss from wax-moths which have a longer season in which to exterminate many of the weaker colonies of black bees.

Fortunately, foulbrood (American only) is found in only a few counties, and to a limited extent. Its ravages in box-hives, unexamined, might be tremendous. Sacbrood and paralysis are also found, though to what extent is not known since very few beekeepers have movable-comb hives, and an examination of colonies is infrequent.

Winter protection for bees is practically unknown, although it might be practiced to advantage. The crops average probably from 40 to 80 pounds per colony, depending upon the season and on the kind of honey secured. Comb, extracted, bulk comb, chunk and "strained" honey are produced. Beeswax is rendered from box-hives, but only in a crude way, a large proportion of the wax being lost. There are three commercial queen-breeders in the State.

The honey-flora of North Carolina is abundant, some of the main producers being sourwood, linden, poplar, the clovers, gallberry, black and tupelo gum, etc. Honeydew is also abundant occasionally.

In summing up the situation Mr. Carr says:

> "North Carolina has a large number of bees. The pollen and nectar producing flora are abundant, and the honey, when properly produced, is high grade. There is a good market in the State for honey, and many more bees could be profitably kept. The beekeepers of North Carolina are now in proper attitude to accept and make the best use of information which will enable them to secure good profits from bees."

Copies of this booklet may be obtained by addressing a request for Bulletin No. 489, United States Department of Agriculture, Washington, D. C.

◆

Minnesota Inspector's Report.—The 1916 report of the State Inspector of Apiaries for Minnesota is just out. Interested parties may get copies by addressing the inspector, Mr. D. C. Blaker, 4420 Grimes Ave., Minneapolis

A total of 8519 colonies were examined by the inspector or his deputies. Of these 360 colonies were found infected and ordered treated. Mr. Blaker has a very efficient system of records by loose leaf cards, which aids in checking the spread of disease.

Through cooperation with the Division of Bee Culture at the Agricultural College, efforts are being made to permanently keep free from disease apiaries within reach of the University Farm beekeeping region.

◆

Food for the Child.—"The Rural School Lunch" is the title of a 24-page bulletin gotten out by the Domestic Science Department of the University of Illinois. The booklet contains much of interest to the parents of school children.

One item, mentioning honey, is worthy of notice. It is as follows: "When we understand what is essential and vital for the growth and health of a child, it yet remains for us to know what foods will furnish these essentials."

"If an average boy were offered his choice between a lunch of bread and honey or one of bread and milk, he would, without doubt, choose the former—there is no question but the former would more completely supply the complex demands of a growing boy or girl."

◆

Accident Insurance for Beekeepers.—The Société Romande d'Apiulture, in Switzerland, supplies its members with a monthly magazine, a library of books on bees, lectures, meetings, and an insurance against accidents. Here is what one of its members had to say, in the November, 1916, "Bulletin" concerning losses:

This season, I undertook the transportation of my bees to the mountain. Along the road, an accident happened; four hives were upset and opened. The driver was stung to such extent that he was incapacitated for a week, and his horses were stung so severely that one of them died within 24 hours and the other was hardly well after two months. It had cost $240 before the accident, and sold for only $160 afterwards.

The Winthertour Insurance Company having a contract with our association, paid the damages, $380 for the lost horse and for decrease of value of the other; $102 for treatment of the other saved horse, repairs of harness, carriage, loss of time, etc., a total of $482.

This incident is a sufficient evidence of the usefulness of our association, to which we must remain faithful. It was my fourth year of bee transportation and the second year with the same drayman. We might have said: Nothing ever happens. But something did happen this time. J. Tallant,

Swiss Bulletin D'Apiculture.

◆

Honey on the Farm.—A recent bulletin of the United States Department of Agriculture is devoted to an analysis of food consumed on the farm, how much per family and per person, and how much of this food is produced at home, how much purchased.

The survey covered a total of 950 families in 14 different States. The States were Vermont, Maine, New York, Pennsylvania, New Jersey, North Carolina, Georgia, Texas, Ohio, Iowa, Wisconsin, Kansas, North Dakota and California.

The four leading States in consumption per capita were North Dakota 3.2 pounds, Texas 2.8 pounds, New York 2.7 pounds, and Wisconsin 2 pounds. Those consuming the least were Vermont with .2 pound, New Jersey .3 pound, Pennsylvania .4 pound, and California .7 pound.

About 57 percent of the honey used on these farms was home produced, the balance was bought.

If these figures argue for anything, it is for the development of home markets by the average beekeeper. We have been, for years, expecting the big cities to use our surplus honey, when in fact many of us might profitably have exerted more effort in seeing that our farmer friends had enough honey to supply them. A little over three pounds as the annual consumption of a person is little enough, especially when compared to 80 pounds and more of sugar. Can we not quadruple this consumption by well directed efforts?

MRS. SEXTON'S APIARY IN CALIFORNIA

◆

A Peculiar Accident.—The Nucla Independent (Colorado) records in one of its recent numbers a very sad and peculiar accident causing the death of Mr. F. W. Huntley, a large and well known beekeeper of that section.

Mr. Huntley was accompanying several loads of honey to the railroad station of his nearest town. While going up a steep hill, both teams broke loose from their load, the wagon backing down and over Mr. Huntley, who was in the rear of the loaded wagon. Death was instantaneous.

◆

Southern Minnesota Meeting.—The annual convention of the Southeastern Minnesota and Western Wisconsin Beekeepers' Association will be held at Winona, Minn., in the Court House on Feb. 27 and 28.

O. S. HOLLAND, *Sec.*

◆

Pennsylvania Convention.—The annual meeting of the Pennsylvania State Beekeepers' Association will be held in the Capitol Building, Harrisburg, March 2 and 3. An interesting program is in preparation.

H. C. KLINGER, *Sec.-Treas.*

◆

The National Meeting.—The annual meeting of the National Beekeepers' Association will be held at the State Capitol at Madison, Wis., on Feb. 6, 7, and 8. The address of welcome is to be given by N. E. France, for many years General Manager of the association.

The following men have been invited to address the meeting, and a large majority of them will be in attendance:

Dr. C. C. Miller, Dr. E. F. Phillips, E. R. Root, C. P. Dadant, Morley Pettit, Dr. S. A. Jones, Geo. W. Williams, Dr. L. C. Leonard, Dr. W. M. Copenhaver, Frank C. Pellett, Prof. F. Eric Millen, E. D. Townsend, Wesley Foster, E. S. Miller, Hamlin B. Miller, Louis H. Scholl, J. D. Bixby, E. J. Baxter, Rev. Francis Jager.

The topics which will be touched upon by the speakers are such as are of especial importance to the beekeeping fraternity, and are such subjects as will have to be taken up by the National to make it of most value. They are as follows:

State and government aid for beekeeping industry.
Educational, research, and extension work.
Production and overproduction of honey.
Comb and extracted honey.
National bee census.
State fairs and exhibits.
Honey and commerce.
Competitors and enemies of honey industry.
Standards of grading, packing, shipping, and others.
Advertising and increasing consumption of honey.
Containers.
Freight and express, imports and exports.
Honey statistics, quotations, distribution of reports.
Supply and demand, the "bear" and "bull" in the honey market.
Efficient protective system for American beekeepers.
Necessity of a National central office.
Plans and policies to make the National a powerful agency for success.

◆

A BETTER COMBINATION

When one neighbor raises flowers,
And another chickens,
Oft they fight like irate powers,
Daily raise the dickens.

Neighbors ought to strive to please,
Folks should not be scrappy.
Better make it flowers and bees
And be truly happy.
—*Louisville Journal.*

◆

California Meeting.—California's State Beekeepers' Association will meet in the Exposition Hall of the State Exposition Park in Los Angeles Feb. 16 and 17. There should be a large attendance

DISTANT VIEW OF A BEE RANCH IN SAN MARCOS PASS, SANTA BARBARA, CALIF.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Keeping Down Swarming and Getting a Good Crop

What do you think of this plan for getting extracted honey and keeping down swarming? We will suppose that we have the hives well shaded and plenty of ventilation and well supplied with supers, but once in a while one will swarm. Now suppose you remove the hive and all surplus supers to one side and hive the swarm in a new hive with frames of foundation except one that would contain a little brood and eggs; this frame would be taken from the hive that swarmed.

Now set this new swarm on the old stand, then place a queen-excluder on the hive, then put all of the supers back on the hive, then shake all of the bees that were left in the old hive in front of this new hive and let them go in; then place the old hive containing the brood on top of all the supers, and in seven or eight days look to see if any queen-cells are started; if there is cut them out and keep right on putting on supers until the honey flow is over; then in the fall of the year double all the swarms up by putting one hive on top of the other. When they are all united take the top hive off and see that the hive left to the bees has plenty of honey for winter. I have had to winter my bees outdoors which I do not like, as I have never been very successful.

MINNESOTA.

ANSWER.—Your story reads all straight until you say to cut out any cells that may be found seven or eight days after swarming. You should have cut out cells on the day of swarming, and then for the next cutting I'd rather wait eight or nine days more.

You say, "Then in the fall of the year double up all the swarms by putting one hive on top of the other." That sounds a little as if you meant to unite two different colonies. I hardly think you mean that, but merely to set over the lower story that at the time of swarming was put above with brood in it. But in the fall there will be no brood in it. Within three weeks after swarming all the worker-brood will have emerged, and in the fall it will be a story filled with honey, provided the flow is good.

Your plan on the whole is excellent, and has been used a good deal.

Giving Queen Room for Early Laying

I have six colonies of bees in 10-frame hives. I fed them late last fall just as much as they would store away in their combs. I am wintering them in a cellar, but before I put them into the cellar I weighed them and they weighed from 65 to 75 pounds each. Will the queen have enough room in early spring to lay?

MINNESOTA.

ANSWER.—There is very little danger that the queen will not have enough room, but if there should be any trouble in that way just take out one of the outer frames of honey and put in its place an empty comb, placing it outside the brood-nest, but next to the brood.

Feeding a Weak Colony in the Winter

Last fall I got two colonies of bees. They were robbed and left weak. How is the best way to feed them so they will go through the winter all right? I do not have any comb honey but have some extracted.

NEBRASKA.

ANSWER.—You can lay sections on top of the top-bars, cover over with cloths, and leave the bees to themselves. You can feed the extracted honey. Put it in friction-top honey pails having a lot of holes punched through the covers with a wire-nail. Have the honey as hot as your finger will bear, but be sure not to scorch it. It will be better to have more than one pail, so that the bees will not be long in carrying the honey all down. Just set the pails upside down on the frames, and then cover up with cloths. It may be worth while to warm up the cellar to 50 or 60 degrees. If you are not sure that the honey is free from disease, you can feed sugar syrup in the pails. Heat the water, and while it is on the stove sprinkle the sugar into it, keeping it stirred until well dissolved. For each part of water, either pint or pound, use 2 or 2½ parts of sugar. Use granulated sugar.

Increasing—Requeening

1. How early would you advise me to start increase as I want the colony to build up strong before fall?

2. Would you advise rearing queens from brood or buying queens? I have some good stock.

3. If I buy should I buy virgins, untested or tested queens?

4. If the queen is clipped and a swarm comes out is it necessary to settle them or will they return to the new hive which has been placed on the old stand?

5. If I start queen cells in a strong colony (made queenless), then give the cells to a 1-frame nucleus would they finish them all right?

KENTUCKY.

ANSWERS.—1. One of the surest ways to spoil your chances for good increase is to divide your colonies too early. A point of chief importance is to have colonies first build up strong, and even then better not do any increasing before about the time for natural swarming, or at least a little before that.

2. That depends. If you want to keep down expenses, don't feel in a hurry, rear your own queens. If you care more for increase than for the expense, buy queens from farther south, unless you can get them early enough nearer.

3. Like enough untested may be advisable.

4. They will return of themselves, although sometimes a swarm will cluster on a tree and remain some time before going back to the hive.

5. Yes; but you better leave the cells as long as you can safely in the strong colony. You can leave them safely in the strong colony until ten days after taking away the queen, provided no queen-cells were started before the queen was taken away.

Sour Honey

I had some dark honey gathered this fall from buckwheat, aster, and some other wild flowers and it was quite thick. After extracting I put it into 10-pound pails. One of these pails fermented and soured. What was the cause? There was no water or moisture in the pail, and the honey was kept in a warm place after extracting.

MINNESOTA.

ANSWER.—Without knowing more about the case I could not speak positively, but my guess would be that the honey was not well enough ripened, and so began to sour.

Believe My Bees Were Poisoned By Spraying

My bees were wintered in a cellar in 1½ and 2 story hives. On May 1 the bees were very strong with plenty of stores. We had no bee-disease. I have my bees in a large orchard, and by the time the spraying was done, June 10, my bees were so depleted that they were killing and dragging out the drones. They built up afterwards; no colonies were lost.

The trees were not sprayed while in bloom, but there was a heavy underbloom of dandelion, and at the last spraying there was much white clover in bloom; there were 3 sprayings. The workers seemed to go to the field and fail to get back. I got the same dose in 1914, but in 1915 there was little under-bloom and the loss of bees was not noticed.

The brood looked healthy, and not many dead bees in front of the hives other than drone larvæ and drones.

IOWA.

ANSWER.—It looks pretty certain that the bees were poisoned by the spray that fell on the dandelion and clover. In States where there is a law against spraying trees while in bloom, there seems nothing to reach the case, and there is nothing for the beekeeper but to grin and bear it. The only law that would be of use would be one forbidding all spraying at any time, and such a law would do more harm than good.

Getting Swarms from Bee-Trees—Baiting for Swarms

1. In May and June there are a number of runaway swarms that go flying across the country. How can I capture them or induce them to settle?

2. Often they have taken up their abode in some hollow tree. How could I use a bee-escape to capture them, letting them escape into a tight box, taking the box home and giving them a queen?

3. How can I put up a box in the woods and let them hunt it up and go into it of their own accord?

KANSAS.

ANSWERS.—1. If you get ahead of them and throw a heavy spray of water upon them you may possibly get them to settle. Some say use a mirror and throw the reflection of the sun upon them. Others say shoot small shot or sand from a shot gun into them.

2. There is no great difficulty in getting all the workers that fly afield by having an escape through which they can pass, with all other exits closed, but the trouble is to get the queen and the younger bees, which are quite satisfied to remain. Possibly you may drive them out by throwing in enough smoke, carbolic acid, or something of the kind. If you can get them out in that way without any escape, then you can quickly close up all chance for them to return.

3. The usual way is put the hive in the crotch of a tree, but it may do as well placed on the ground. One or more empty brood-combs may help, but the moth is likely to get them if they stay long.

Kind of Sections—Artificial Shade

1. Are untested queens fertilized?

2. Which sections are the best to use, plain or beeway?

3. What is the best plan for shade if you have no trees?

MISSOURI.

ANSWERS.—1. Yes. If unfertilized they are sold as virgins.

2. Personally I prefer the beeway, and I think the great majority agree with me.

s. Vines may be quickly grown. You may have a shade-roof of shingles or any cheap material, allowing it to project on the south side, weighted down with stones. A satisfactory way is to take an armful of hay or straw—better long grass freshly cut—and pile it on top of the hive, weighting it down with two or three billets of firewood.

Honey and Sugar Compared

1. A man who owns a large number of bees gave up a piece of ground he had been renting and accidentally left a few hives on the place. A new beekeeper rented the ground and put his bees on the place. He found the boxes left there by the former beekeeper and cleaned them out and set them in a pile.

A few days later a swarm of bees was found in the boxes. The renter took care of the bees and built them up. Some time later he casually let drop a remark to the former renter, telling him of his boxes and that he could have them as soon as the bees were transferred. The former renter claimed both the bees and the boxes. To whom do the bees legally belong?

2 How sweet is honey? Some say it is twice as sweet as sugar. Is this not a mistake? MINNESOTA.

ANSWERS.—1. I am not a lawyer, but I'll tell you how the thing looks to me. Call the first renter A, and the second B. If A had taken away all his hives when he left the place, and B had caught the swarm in his own hive, there would hardly be any question as to B being the owner of the swarm. The only difference in the actual case is that A's hive was used for a time, and A might claim rent for the hive during the time the swarm was in it Also B might claim rent for the ground occupied by A's hives.

2. I have made considerable effort to learn just how honey compares with sugar as to sweetness, but never succeeded. Something was given in that direction by the authorities at Washington, D. C., but if I remember correctly it was not definite. But I think a pound of honey will do no more sweetening than a pound of sugar, if as much.

Miscellaneous

1. Would it not be a good thing for the National Beekeepers' Association to have a warehouse where beekeepers could send their product, such as honey, beeswax, etc., to be sold. Also where they could buy supplies say about 5 percent above cost? The warehouse should be centrally located near water and railroad, so as to reduce the cost of sending.

2. How much do bee papers pay for a word or line for articles?

3. When sending bees from the South to the North in early spring, say about April 1, why not get a comb of pollen and put it in a strong colony? There are train loads of pollen going to waste every spring in the foothills in northern California. OBSERVER.

ANSWERS.—1. Yes, something of this kind has been discussed many times, but nothing has ever come of it. Possibly something may yet.

2. I don't know; generally, I think, they have more than they can publish without paying anything, but some writers are paid at varying prices

3. Apparently you think the lack of pollen in the North is responsible for the lack of bees. There's plenty of pollen here.

Wintering in a Dry Cellar

1. I wish to winter my bees in the cellar, which is very dry, and holds temperature from 40 to 45 degrees. Do you advise removing the covers and raising the hives in front of those that are on shallow bottom-boards?

2. The cellar is large, but the part I want to put them in is 10x15 feet. How many can I put in that space for best results?

3 One of my colonies cast a swarm and a virgin queen accompanied the swarm along with the old queen. Was that unusual? ILLINOIS.

ANSWERS.—1. If you raise the hives in front it will be hardly necessary to remove the covers.

2. If the air in the cellar is not changed too slowly, 125 to 150 colonies ought to do well in it. Instead of having the temperature 40 to 45 degrees, it would be better to have it 40 to 50 degrees.

3. Yes, it is quite unusual.

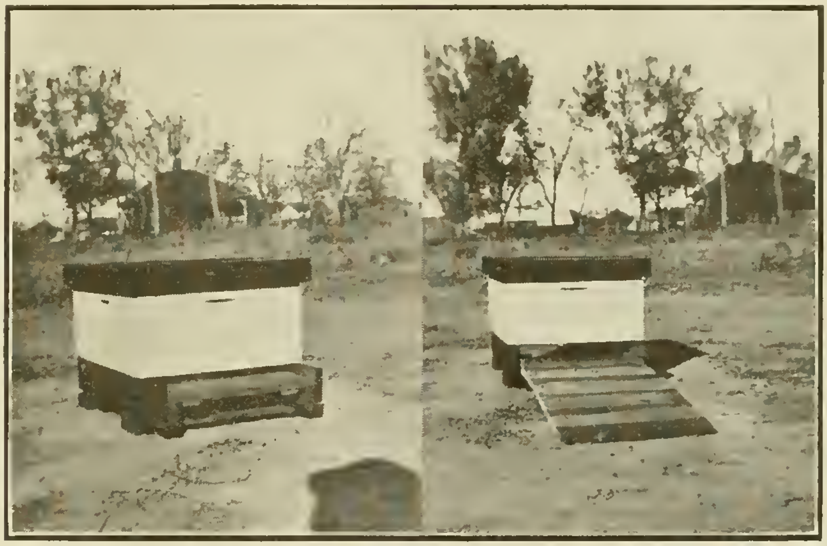
Stamping Section Boxes

Do you know a way of printing honey section boxes without the stamping-ink running together? ILLINOIS.

ANSWER.—Any good stamping-ink or printing-ink ought to work all right. It requires a little practice not to have your stamp too wet with ink nor too dry. When you strike your stamp upon the ink-pad, if it is too wet with ink, have a piece of cloth upon which to strike your stamp once or more so there will not be enough ink on the section to run together. Then you may be able to stamp several sections before the impression upon the section is too faint, when you must strike your stamp again upon the pad. A good deal depends upon having the ink-pad just wet enough. If you have it just right, neither too much nor too little ink upon it, you may be able to work straight along striking pad and section alternately

New Hive Stand and Bottom-Board

Attached are photographs of a hive stand and bottom-board combined I would like to have you pass judgment on it. The left hand hive shows the hive on the stand with bottom-board in place.



A COMBINATION BOTTOM-BOARD WHICH CAN BE SLID TO THE FRONT

The hive on the right shown is on its stand with bottom-board drawn out, which makes it easy to clean. It slides in grooves on the hive stand, and when in place it is bee tight at the back, but by sliding it back a little it will give ventilation when needed. KANSAS.

ANSWER.—Beekeepers are an inventive lot, and many a one invents something that he likes, and yet other beekeepers do not care for. I am a little afraid your invention is one of that sort. If you leave the movable board drawn out in harvest, the bees will build down. Drawing it out makes it convenient, as you say, for cleaning, but you can have that advantage more easily and cheaply by following the plan more in use in Europe than in this country, which is to slip in a piece of pasteboard or roofing paper.

Cellar Wintering

I have been having trouble with cellar wintering. My cellar is about 15 feet square, cemented on the bottom and sides. I have a coal stove in a small room adjoining with a 6-inch thimble opening into the bee-room for ventilation upward, also three 3 inch tin conductor tubes coming through the walls and extending nearly to the floor on two sides of the room.

Two years ago I had about 60 hives in this cellar with the front ends of the hives raised two or three inches by an entrance block. I had no fire and left all ventilators open. I lost 13 or 14 colonies

A year ago I had about the same number and left them out in order to let them get a late flight, but the weather turned quite cold and I had to take them in without the flight. The hives were full of frost so I raised the front ends of one-half of the hives, and the duck-cloth on the front ends of the rest. I kept a coal fire a while to dry out the frost, and in the coldest weather when the thermometer went down near 40 degrees in the room. They seemed to be doing well until about the middle of the winter, when they began coming out and dropping on the floor and dying. I lost 24 colonies last year and the remainder were about one-half strong and the rest quite weak.

What was the trouble? A good many of the combs were moldy, and some of the colonies seemed to have diarrhea and others not. The room is banked up as high as the walls with straw about a foot thick. I think putting them in with frost in the hives is responsible for some of the trouble, but not all.

This year they had a good flight on Dec. 9, and were carried in two days later in good condition. I now have only 47 left. I have not raised any hives or duck covering yet, and would be glad to have you advise me. Do you think the 6-inch outlet in the chimney about three feet below the ceiling was too large or the 3-inch intake pipes too many? I kept one and sometimes two closed in the coldest weather with a coal fire burning slowly in the back room and the door open between. NEW YORK.

ANSWER.—Without any fire, the likelihood is that your cellar was too cold two years ago. A year ago you say you took them in after they had endured more or less confinement without a fly, and no doubt their intestines were somewhat distended when taken in, and that was worse than if they had been confined in the cellar for a longer time. The moldiness of the combs seems to indicate lack of ventilation, and your closing part of the ventilation in the coldest weather may have made matters worse.

You seem to have made a good start for this winter, and I would advise that you keep up abundant ventilation, both of the hives and the cellar, and then try to keep the temperature up to about 50 degrees. There is, however, a good deal of variation in thermometers, and you should try to find out whether your thermometer marks 50 degrees when the temperature is really only 40 or 45.

Transferring—Extracted Honey—Number of Colonies in United States, Etc.

1. In transferring bees from box-hives to movable-frame hives, it is explained in the Bee Primer that you must lift the body from the bottom board and set it upside down and then place the forcing box on the hive, etc. Now suppose your box-hive has the bottom nailed to the hive-body, so you can't invert it. Could I not take the cove

off of the box-hive and place the forcing-box on top of the hive instead of on the bottom and then pound the hive, and would the bees not cluster in the forcing-box, just the same?

2. In working for extracted honey is it best to put a super with combs in on the hive as soon as the bees begin to bring in pollen in the spring, or is it better to wait until the flow is on and they have stored some in the brood chamber? Will the queen lay brood in these frames if put on early? If she starts to lay in them in the spring will she lay in them all summer?

3. Last fall when I had extracted I put the combs back on to be cleaned, but there was still a little honey coming in from the fields so they stored a little in the frames (not enough to cap). Will they work in these in the spring as well as in empty ones?

4. If the queen lays eggs and brood hatches in extracting combs and then the bees store honey in them afterwards, will this honey, when extracted, be darker than that from combs in which no brood has been reared? Will there be any difference in the quality (taste)? How can the queen be prevented from laying in the supers without an excluder?

5. If honey is extracted about the middle of July will it keep until the last of September in open tanks or barrels? The thermometer sometimes reaches 100 degrees and over in July and August. How long will good honey keep in bottles or jars? Will it granulate when bottled?

6. About how many colonies of bees are there in the United States? In Nebraska?

7. Early in the spring before there is any field work for the bees, if you feed the bees small amounts daily, will the queen begin laying?

8. Please explain the best method of uniting two weak colonies. Would the two store more honey united than separate? Would they be liable to swarm?

9. In wintering bees I have read one should make a frame of screen to lay on the frames and then the mat or other absorber on top of this so the bees can move freely, from one frame to the other. Can't they move just as well from the bottom? How do they get from one frame to the other if the mat or absorber is laid directly on the frames?

10.—In requeening should the old queen be killed before the new one is introduced?

11. Is there any way to make a home-made bee-escape that is cheap and practical? Should the bee-escape be put on the day before the super is to be taken off or can you get the bees out of the super the same day?

12 Is there enough honey produced in the United States to supply the demand or is there place for more beekeepers?

NEBRASKA.

ANSWERS.—1. Generally a box-hive has the top nailed on and the bottom not nailed; hence the instruction to invert. If the top can be lifted off, then there is no need to invert, whether the bottom be tight or loose.

2. It is not best to put the extracting-super on before it is needed, as it makes just so much more room to be kept warm when all the heat is needed below to keep the brood warm. The queen is likely to lay in the second story, and to continue it. However, if the brood-chamber be small, it may be a desirable thing to have the queen lay in the second story at least until the harvest.

3. The bees will work just as well—possibly better—with some honey in the extracting-combs, but that honey that is left over winter in the combs is pretty certain to be candied, and to hasten granulation in the honey that is freshly stored.

4. It is generally considered that honey stored in combs which have been used for brood-rearing is just as good as any in color and taste; but some think there is a little difference. It is a difficult thing to prevent the queen from laying in the upper story without using an excluder, although I think she is less likely to go up if the extracting-combs be shallow. Perhaps Editor Dadant will tell us about that. I think E. D. Townsend keeps the queen down by having full combs of honey in the story next the brood-chamber, adding additional stories above this story instead of under.

5. There is a big difference in honey as to the tendency to granulation. Some will granulate within a week or two, while some will keep liquid a year. I should expect that your honey, if thoroughly ripened, might remain liquid until the last of September; yet it might not. Bottled honey may keep good 10 years or more, but will generally granulate unless heated to above 130 degrees and sealed.

6. The 1910 census gives about 35,000,000 colonies for the United States, and 46,000 colonies for Nebraska. This counts only bees on frames and does not list those in cities.

7. Yes, if you were in a place where there was an utter dearth of bee-pasturage, with warm weather, you could get the queen to lay by feeding. In your region you probably cannot make a day's difference in the time she begins.

8. Very early in the season you can generally unite by merely lifting the combs with adhering bees out of one hive and setting them in the other. At other times put a sheet of newspaper over the top bars of one hive and set the other hive over it. The bees will tear away the paper and unite of their own accord, and in four or five days you can move the occupied combs from the one story into the other. The united colony may store more and it may store less than the two separate colonies—depends upon whether they are too weak to be built up for the harvest. The united colony will be more likely to swarm than one of equal strength not united.

9. No; in cold weather they can move from one to another over the top, where it is warm, more readily than under the bottom, where it is cold. If a mat is laid flat upon the top-bars, a little stick, or something of the kind should be under the mat to afford a passage under it.

10. Yes; although the new queen may be caged in the hive a day or more before the old one is killed.

11. Possibly you might make a cone-escape with wire-cloth. Generally you will not get the bees all out before the next day. [Page 198, June, 1915, J. E. Crane gave the description of a home made bee-escape, cheap and practical. A solid honey-board is placed under the super and the bees come out at the end of this board in the manner shown in the illustration.—EDITOR]

12. The demand is so little that many beekeepers feel they do not get enough for their honey. Yet it would be for the good of the nation if ten times as much honey were consumed as is now produced, and if the people were sufficiently informed as to the value of honey, that amount might easily be consumed.

Queen-Excluder—Hybrid Bees—Salt for Bees—Basswood Trees—Honey-House—Bee-Cellar

1. I purchased ten wood and wire queen-excluders, and as my bees are all of the black strain the queens go through. I will need some more bees. Would you advise me to get the same kind or what would you do?

2. Could you tell me of a good reliable place to buy queeens without paying too big a price?

3. How long does it take a man to get immune to bee-stings, being stung two or three times daily, and when immune will it last from fall until spring?

4. Would it pay to run an outyard with only 20 or 25 colonies at home and about that many at the outyard? I have an auto and can find a good location about three or four miles from home.

5. A neighbor beekeeper tells me that a hybrid bee is more cross than a pure Italian or a pure black. Is this so?

6. Will it injure honey to let it stand in a galvanized tank? If so, what can be done with it?

7. Would taking whisky be any help to a person when real sick from bee stings?

8 What is the reason bees work so much on salt? Would it pay to leave salt some place for them?

9. How many basswood trees for each colony would you want before you would consider it a fairly good place for an outyard with white clover on the side?

10. What does it cost to join the Beekeepers' Association, and who do you see about it?

11. If I build a honey house with a cellar under it for my bees, would carpenter work in this house bother the bees in winter?

IOWA.

ANSWERS.—1. If the queen-excluders are all right, neither black nor Italian queens should go through. Other things being equal I suppose the wires are preferable to the stamped zinc, but I surely wouldn't want those that would let queens through.

2 I must refer you to the advertising columns of the Bee Journal. I think any of those advertising will furnish good queens, and you can compare prices yourself.

3. I don't know very definitely, but I suppose that in such a case a man might become immune to a good extent in two or three months, and I think the immunity should last through the winter. But if you mean by "immune" that a bee-sting doesn't hurt at all, then I think there are very few that ever become really immune. I have been at it for more than 50 years, and a bee-sting hurts me like sixty now. But the hurt doesn't last very long, and it swells very little.

4. That depends on the location. It would be a very poor location that would not support 40 colonies. If the location is fairly good it will hardly be advisable to start an outapiary until you have more than 75 or 100 colonies.

5. It is very often so.

6. I hardly think it will do any harm for the few days it should remain in the tank before being put in permanent containers.

7. It would likely do more harm than good.

8. I don't know, but I suppose the salt supplies some need, and as they seem to care for it it might be well to give it to them.

9. I don't know. I have seen it estimated that one tree was enough for a colony, but I don't know how correct that is.

10. If you cannot join through some local association near home, you can join directly by sending $1.50 to the secretary, Prof. F. Eric Millen, Ames, Iowa.

11. With only a single-board floor over the cellar and with much heavy pounding, I should be afraid of results. With a double floor and something to act as a deadener a little pounding would hardly do much harm.

ARCHDEKIN'S FINE ITALIAN BEES AND COMBLESS BEES

April, May, June queens warranted purely mated, $1.00 each; six for $5.00; per doz., $9.00. Bees per lb., $1 25. With untested queen, $2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

J. F. Archdekin Bordelonville, La.

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower........................ .50
American Poultry Advocate............. .50
American Bee Journal.................... $1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

Phelps' Golden Italian Queens will please you.

Three-banded Italian bees and queens Send for our 1017 calendar—it's free.
A. E. Crandall & Son, Berlin, Conn.

Bees and Queens from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens.
John W. Pharr,
Berclair, Tex.

Phelps' Golden Italian Bees are hustlers

Vigorous prolific Italian queens, $1.00; 6, $5 00. My circular gives best methods of introducing.
A. V. Small,
2302 Agency Road, St. Joseph, Mo.

For Sale—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked.
Marchant Bros.
Union Springs, Ala.

A Little Ad in our classified columns will sell that perfectly good equipment that you no longer need, Only 15 cents per line each insertion.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M Bates, Rt. 4, Greenville, Ala.

Bees for Sale—1000 lbs. in 1-lb. packages at $1.00 per lb. Untested Italian queens, 70c extra, to be shipped April 1 to 20. All orders must be in by April 1.
T. W. Burleson, Waxahachie, Tex.

For Sale—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

Business First Queens descriptive price list tells all about them and my $10 free offer. Tested queens ready now. Order early.
M. F. Perry, Bradentown, Fla.

Gray Caucasians, exceptionally vigorous and a long lived race of bees; are known as the most gentle of all bees. Free circular and price list. Orders booked now for spring delivery. F. L Barber, Lowville, N. Y.

For Sale—2-fr. nuclei 3-band Italians with queen, $2 25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices.
J B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

Leather colored 3-band Italian bees, $1 25 per pound. Tested queens, $1 00; untested, 75c each; 2-fr. nuclei, $2 00; extra combs, 15c each. Delivery after April 15.
C. H Cobb, Belleville, Ark.

Golden and 3 banded Italians; also Carniolan queens. Tested, $1.00; untested, 75c each. For bees and nuclei write for prices. Discount on large orders. C. B Bankston,
Buffalo, Leon Co., Tex.

Golden Italinan Queens bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 59 Broadway Ave., San Jose, Cal.

Bees for Sale—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

For Sale—Apiary of bees at Tularosa, N. Mex.; up-to-date appliances, good bees, good bee location, and fine climate to live in. Selling because of death of late owner, J. A DeWitt.
N. B. DeWitt,
Care El Paso & S. W. Ry., Douglas, Ariz.

My Bright Italian queens will be ready to ship April 1 at 75c each; virgin queens, 30c each. Send for price list of queens. Bees by the pound. Safe arrival and satisfaction guarranteed.
W. W. Talley,
Rt. 4, Greenville, Ala.

Year old Italian queens, $6 00 a doz. Bees by the pound April and May delivery. Good bees, queens, service, and satisfaction always. Write for prices at once.
S. Mason, Hatch, New Mex.

Queens, Doolittle and Moore strain, also Goldens that are Golden. One select unt. $1 00; 6, $4.25; 12, $8.00. Tested, $1.25.

Bees by the pound a specialty. One 1-lb. package, $1 25; one 2 lb., $2 25; large lots less, also nuclei and colonies. Ready March 15th. Booking orders now. Circular free.
J. E. Wing, 155 Schiele Ave , San Jose, Calif.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

Tell several thousand people what you have for sale with a few words in this department.

Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

Golden Italian queens of the quality you need. Bred strictly to produce Golden bees that get the honey. Satisfaction guaranteed Untested, one, 75c; dozen, $8.25; 50, $32 50; 100, $60 Delivery after March 25. Bees by the pound nuclei or full colony.
L. J. Pfeiffer, Motor Rt. A, Los Gatos, Calif.

For Sale—Three-band Italian bees and queens. Three-frame nuclei with this year's rearing queen, $3.00; without queen, $2.75. Three pounds of bees, $3 25. Young queens, 75c each. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. Send your orders now and money when you want them shipped. Can begin shipping April 15. Bees are all in standard hives, Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease. The following is an extract from one of our many satisfied customers: "Today, Aug. 16, I hived the second large swarm from the colony I started from a 3-frame nucleus I bought from you in June, and have about 40 pounds of surplus honey in hive." It pays to keep well bred stock whether it is cattle or bees. Name furnished on application.
The Hyde Bee Co., Floresville, Tex.

HONEY AND BEESWAX

Wanted—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

For Sale—Fancy and No. 1 comb honey.
W. L. Ritter, Genoa, Ill.

Wanted—Comb, extracted honey, and beeswax.
R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

Wanted—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

I Need a large supply of extracted honey, must be white clover or its equal. 60-pound packages preferred. Quote your lowest cash price f. o. b. here. Send sample if you are interested.
F. Bender,
221 Pub. Square, Nashville, Tenn.

Wanted—Extracted honey in both light and amber grades. Kindly send sample, tell how your honey is put up, and quote your lowest cash price, f. o. b. Preston.
M. V. Facey, Preston, Minn.

No. 1 white comb, $3.50 per case; No. 2, $3.00. No. 1 fall comb, $3.00; No. 2, $2 50; 24 sections to case. In six case lots 10 percent discount. H. G. Quirin, Bellevue, Ohio.

Wanted — White extracted honey also light amber in any quantity. Send sample and lowest cash price.
E. B. Rosa, Monroe, Wis.

Wanted—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

Comb Honey our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

Wanted—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

Wanted—Well ripened white extracted honey, preferably alfalfa and sweet clover or white clover. Send sample and price to The Colorado Honey Producers' Association
1424 Market St., Denver, Colo.

Special offer of "The Domestic Beekeeper" six months for 25c worth of stamps. Send it today. Address "The Domestic Beekeeper" Northstar, Michigan.

Honey Wanted—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

SUPPLIES.

Wanted—Cheap honey extractor in good order. J D. Sherwood, Ft. Madison, Iowa.

The Perfect Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

How to double your honey production at a small cost. Send 2c stamp for information. W. M. Budlong, 1523 14th Ave., Rockford, Ill.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

Bee-Keeper, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

Good second-hand 60-lb. cans, 2 cans to the case, 30c per case, in lots of 10 cases or less. In lots of 25 cases or more, 25c per case. These prices are f o. b. Cincinnati.
C H. W. Weber & Co.,
2146-48 Central Ave., Cincinnati, Ohio.

Wanted—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address,
American Bee Journal, Hamilton, Ill.

For Sale—50 new 10-frame hives with metal covers complete with frames nailed and wired at $1.75 each; in lots of 25 or more at $1.50 each; also 50 10-frame supers nailed and wired; hive and supers painted two coats at 60c each; for the supers in lots of 25 or more, 50c each. M. C. Silsbee Co.,
P. O. Cohocton, R.F.D. 3, Haskinsville, N. Y.

"Dad" Townsend and his two sons are simply honey producers, the same as most of you are, nothing more. The boys produce the honey and "Dad" will tell you how they do it from month to month in "The Domestic Beekeeper." Send 25c in stamps and read "The Domestic Beekeeper" the first half of 1917 and see how the crop is produced. Address, "The Domestic Beekeeper," Northstar, Michigan.

SITUATIONS.

Work wanted in apiary in southwest States; some experience as beekeeper.
Mrs. O. A. Peterson, Rt. 8, Owatonna, Minn.

WANTED—Beekeeper familiar with Rocky Mountain conditions to handle bees on shares. Can make good offer. Write stating age, experience, etc.
A. H Dunn, Fort Collins, Colo.

WANTED—Man of more or less experience to help in comb and extracted honey production in northern Illinois. Address,
Bruner's Bees,
3836 N. Kostner Ave, Chicago, Ill.

THE 25C OFFER for the "Domestic Beekeeper" for the first half of 1917 is for *new* subscribers *only* as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it. Address "The Domestic Beekeeper," Northstar, Michigan.

WANTED—A good bee-man for 1917; also an assistant. Must be reliable men. State wages, and give references.
W. J. Stahmann, Clint, El Paso Co., Tex.

WANTED—Queen-breeder to take up proposition to supply our members with queens. Location and equipment furnished. About 3000 queens used in 1916.
Idaho Oregon Honey Producers' Ass'n.,
New Plymouth, Idaho.

WANTED—Reliable farm raised man of good habits, who has had some experience with bees, as helper with bees, etc., season 1917. Large apiaries. Steady employment to right party. Give age, experience and wages wanted first letter.
Frank Kittinger, Franksville, Wis.

WANTED—A position in a large apiary. Understand both comb and extracted honey productions, and can assist in queen rearing, as I understand the business. Would prefer position in the southern States. Address,
J. R., Care of American Bee Journal,
Hamilton, Ill.

ARE YOU a member of the National Beekeepers' Association? If not, *you should be.* The dues are $1.50 each year, which includes a year's subscription to the official organ of "The Domestic Beekeeper." "Dad" Townsend, the owner and publisher of "The Domestic Beekeeper," has secured more members (ask the secretary) for the *National* than any one else, and perhaps as many as all others combined, and want to add another thousand members this winter. Will you be the next? We hope so, for it is with great pleasure that we are able to send in a nice list of members each week. Mail the $1.50 today. "The Domestic Beekeeper," Northstar, Michigan.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

MISCELLANEOUS

25 LADIES' COOTS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

50 ACRES of bottom land in central Oklahoma for trade or sale. Fine location for apiary. Close to oil wells.
L. Benson, Gillette, Wyo.

MARKET prices paid for junk, rags, burlap, carpet, rubber, rope, paper, books, copper, brass, all metals, scrap iron, raw furs in large or small lots. Send for list.
Chas. G. Bolton, Zieglerville, Pa.

THE very best bargain you can get for 25c worth of stamps is "The Domestic Beekeeper" for the first half of 1917. Address "The Domestic Beekeeper" (successor to the Review) Northstar, Michigan.

WANTED

QUEEN EXCLUDERS wanted for 10-frame hives.
Otto Bender,
Rt 10, Jefferson Barracks, Mo.

TRADE—Safety writing desk, $75 rifle for bees.
A. J. Graves, Ocheyedan, Iowa.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—Bees to run on shares by experienced man. Am familiar with conditions in the western States. Address,
E. Zion, Goldroad, Ariz.

WILL exchange $18 incubator for reversible extractor, or pay cash. Write
Lorenzo Clarke, Winona, Minn.

WANTED—To exchange six Vols. History of the World for bee-books.
E. E. Nelson, Rt. 2, Renville, Minn.

WANTED—Four frame hand-power automatic extractor; ball-bearing, slip-gear, comb pockets 12 inches. Must be guaranteed.
W. F. Byers, Monroe, Iowa.

THERE will be big things doing this year along the line of establishing a uniform selling price for honey, both at retail and at wholesale. "The Domestic Beekeeper" will be headquarters for information upon this subject. Send 25c in stamps for six months' subscription to the "Domestic Beekeeper," and keep posted on the most important subject confronting the honey producer today. Do it now. Address "The Domestic Beekeeper," Northstar, Michigan.

POULTRY

WHITE and buff Wyandotte and dark Cornish eggs for hatching from heavy laying and prize winning stock. Get my catalog; "it's free." Am booking orders now.
Joseph Cox, Valencia, Pa.

LUCERNE LAWNS LEGHORNS LAY—Because they are bred that way. Large, thrifty, vigorous, farm range raised Single Comb White Leghorns will fill your egg baskets in the winter when your bees are resting and eggs are high. Safe delivery and fertility guaranteed. References any bank or banker in Piatt county. Get a start with fifteen eggs prepaid any address in United States, $3.25.
Lucerne Lawns Farm, Paul D. Cooper,
Rural Route 3, Hammond, Illinois.

FOR SALE

FOR SALE—200 comb-honey supers, standard eight and ten frame size, painted, 50 and 40 cents. Write
Chester Keister,
Rt. 1, Clarno, Wis.

QUEENS ON APPROVAL—A select tested queen on approval. Send address for description etc. Bees and supplies for sale.
A. M. Applegate, Reynoldsville, Pa.

FOR SALE—Well established retail honey business in one of the largest industrial centers of the world. Reason for selling is my apiaries are too far away to work to advantage, so I wish to move near the bees and devote all my time to them. A rare opportunity for a live man with a little capital. Established 1910.
John C. Bull,
811 So. Hohman St, Hammond, Indiana.
Phone 1023 J.

BEGINNING with the January number the name of the Review was changed to "The Domestic Beekeeper" and greatly enlarged, there now being 48 pages and cover; the pages being an inch larger each way. Listen, we want every reader of the American Bee Journal to see what a fine monthly we are now putting out, and we are going to offer a special bargain of six months' subscription to "The Domestic Beekeeper" for the first half of 1917 for the small sum of 25c. Just drop 25c worth of one or two cent stamps in a letter and write your name plainly and mail to "The Demestic Beekeeper," Northstar, Mich., and "The Domestic Beekeeper" will come to you regularly for six months.

SWEET CLOVER SEED—We have on hand several hundred pounds of hulled white sweet clover seed which has weed seeds mixed with it.

While the percentage of weed seeds is not large, this seed would not do for field sowing. It is, however, quite suitable for roadside planting or for sowing in waste places. Special price in lots of 10 pounds or more at a time, 10c per pound.

We also have some of the yellow and white biennial seed mixed. This will do very well for sowing for bees in waste places. Price in lots of 10 pounds or more 12c per pound.
Dadant & Sons, Hamilton, Ill.

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for April, May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10 00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2 00

1 frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3 50.

When queens are wanted with nuclei or packages add queens at prices quoted above. Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex.

FOREHAND'S QUEENS

15 LBS. SURPLUS ***Which Colony is Yours, Mr. Beekeeper?*** **150 LBS. SURPLUS**

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of $3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All our yards are pure, so you take no risk in getting a hybrid. Four reasons why you should use our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. WHY? Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

Untested	$ .75	$ 4 25	$ 8.00
Select untested	1 00	4.75	9.00
Tested	$1.50	$ 8 75	$17 00
Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

Honey Wanted

If you have any white or amber honey to dispose of, write us sending sample at once. Also state how honey is packed and price you ask for the same.

DADANT & SONS
Hamilton, Illinois

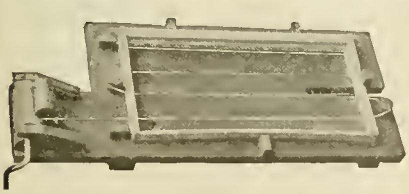
Write for price list and booklet descriptive of our

HIGH GRADE
ITALIAN QUEENS
And Bees by the Pound
JAY SMITH
1159 DeWolfe St.
Vincennes, Indiana

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa



PATENTED

WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

NOTICE TO SUBSCRIBERS

We are obliged to cancel many of our prices of combinations of the American Bee Journal with bee books. Those desiring to take advantage of the combination offers will please disregard former offers and order per the followng list, which gives postpaid prices for the United States. For Canada add 10 cents for yearly subscriptions and for foreign countries add 25 cents:

Books	*Price post-paid alone*	*With A B J 1 yr*
Dr. Miller's "Thousand Answers" (ready March 1)		$1.75
Langstroth on the Honey Bee	$1.50	2.00
Doolittle's Scientific Queen Rearing	.50	1.25
Bee Primer	.15	1.00
Original Langstroth (reprint)	1.00	1 75
Productive Beekeeping	1.50	2 25
Beekeeping (Phillips)	2.00	2.50
A B C & X Y Z of Bee Culture	2.50	3.00
Dr. Miller's "Fifty Years"	1.00	1.75
Advanced Bee Culture	1.00	1 75
How to Keep Bees	1.00	1.75

AMERICAN BEE JOURNAL, Hamilton, Ill.

"Every Day is Honey Day at Our House"

Give the Children Honey
NATURE'S OWN CONFECTION
Fresh from Pellett's Apiaries
FOR SALE HERE

Attractive cards like the above for store windows will help sell honey. Size 9x11 inches. Printed in two colors. Price, 5c each; six for 25c, postpaid.

Another card gives cuts showing relative food value of honey and other products. These cards are the same size as the above, and in two colors. Just the thing to place in stores to push sales of honey. Prices 5c each; six for 25c. Postpaid.

American Bee Journal, Hamilton, Ill.

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

HONEY AND BEESWAX

CHICAGO, Jan. 18.—Comb honey is beginning to move a little more freely than for the past 30 days, and it may be that we will clean up yet to a greater extent than was the expectations 60 days ago. Prices are, if anything, weaker.

Best grades of white are bringing 14c per pound with an occasional small lot at 15c per pound. Amber grades are from 1@2c per pound less. Extracted remains steady at from 9@10c per pound for the best grades of white with ambers at 7@8c per pound. Light ambers, good flavor, at 9c per pound. Beeswax is ranging at from 30@32c per pound.

R. A BURNETT & CO.

SAN ANTONIO, Jan. 15.—There is little or no honey offered in quantities for shipment from Texas at this time. Nearly all surplus in hands of producers has been marketed. Extracted, according to color and flavor is bringing 8@10c in wholesale markets. Beeswax is very firm. We are paying 27c cash and 30c exchange.

SOUTHWESTERN BEE CO.

KANSAS CITY, MO., Jan. 18.—The honey market is slow, about $2 85 being the top price for fancy white comb honey down to $2.50 for No 2 On account of the raise in the local freight rates, the consumption of honey has been curtailed considerably, but we understand that the railroads will adjust these rates after the first of the year and we believe there will then be a better demand for comb honey. Extracted is firm at 7½@9c a pound, and No. 1 beeswax is selling at 25c a pound.

C. C. CLEMONS PRODUCE COMPANY.

CHICAGO Jan. 19.—The honey market is very quiet and we are very much surprised for the reason that it is the cheapest commodity on the market. We have over two carloads of comb honey on hand. We have already sold three carloads up to date, but it looks as though we are going to have a better demand after the first of the year We are selling 24 section cases for $2 75 to $3.00, extra heavy weights glass fronts $3.25. Extracted honey is in light supply and the demand is very active, selling 9@10c.

Beeswax ranges from 27@32c, according to quality and brightness. We are advertising the honey liberally in the different ways in order to create a bigger demand. Let us all work as best we can. D. J. COYNE.

DENVER, Colo., Jan. 18.—The demand for comb honey in carload lots is improving. We are quoting the following jobbing prices;

Comb honey, fancy white, $2.84; No. 1 white $2.70; No. 2, $2 57; per pound of 24 sections. Extracted, white, per pound, 0@9½c; light amber, 8½@9c per pound. we are always in the market for beeswax; for clean yellow wax we are paying 30c per pound in cash and 32c in trade, delivered here in Denver.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Magr.*

EASTERN BEEKEEPERS

This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars $5.00 a gross.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

BEE-SUPPLIES of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.

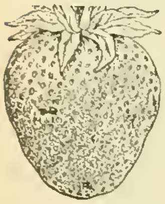
J. W. ROUSE, Mexico, Missouri

"ROUGH ON RATS" ends **RATS, MICE,** Bugs. Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. **Economy Sizes 25c. 50c.** Small 15c. Used the World Over. Used by U. S. Gov't. **Rough on Rats Never Fails.** *Refuse ALL Substitutes.*

20 Packets Seeds—10c.

We want every reader to test **"HARRIS SEEDS THAT HUSTLE."** Send 10c. now—before you forget for this mammoth collection. We send you 20 separate packets finest varieties—one each—of **Beets, Carrot, Cabbage, Celery, Cucumber, Lettuce, Cress, Muskmelon, Watermelon, Onion, Parsley, Parsnip, Radish, Salsify, Spinach, Tomato, Mixed Poppies, Giant Cosmos, Double lap Calendule** and **Children's Botanical Garden,** a curiosity collection of flower seeds. With this collection we send rebate check for 10c. and big catalog of world's finest seeds.

HARRIS BROS. SEED CO., 284 Main St., Mt. Pleasant, Mich.



4 MONTHS FOR 10c

Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

CASH paid for butterflies insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 2c stamp at once for prospectus.

SINCLAIR, Box 244, D Los Angeles, Cal.

FEMALE
MALE

Paint Without Oil

Remarkable Discovery that Cuts Down the Cost of Paint Seventy-Five Percent

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

29 Years' Potato Experience

For over a quarter of a century I have made a specialty of growing and handling Choice Seed Potatoes, testing all the leading varieties, retaining and improving the best. This year's list is the cream.

My 30th Annual Seed Book

should be in the hands of every progressive farmer and gardener. It contains 96 pages crowded full of valuable information. The best in Seed Potatoes, Field and Garden Seeds of all kinds. Write postal today.

L. L. OLDS, President

L. L. Olds Seed Co. Drawer 12 Madison, Wis.

GOOD USED PIANOS AT CLEARING SALE PRICES SOLD UNDER WARRANTY AND SHIPPED ON APPROVAL AT OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; $75.
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; $85.
Pease Piano Co., upright, rosewood; $100.
Smith & Barnes, upright, mahogany; $115.
Mason & Hamlin, upright, ebonized, dull finish; $125.
Sheraton upright, mahogany, nearly new; $135.
Empire Piano Co., upright, mahogany, superior tone; $150.
Fischer upright, golden oak, fine condition; $175.
Fischer upright, mahogany, like new; $200.
Story & Clark, upright, elaborate style, mahogany; $225.
Knabe, upright, mahogany, perfect condition; $250.
Behr Bros., upright, mahogany, slightly used; $275.
Knabe, upright, mahogany, Colonial style; $300.
Steinway, upright, mahogany; $350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY CHICAGO, ILLINOIS

Who wants to wade through skim milk up to the chin? Then why spend *hours* digging out facts that you can get to in *minutes?* The Farm Journal dumps the skim milk. Gives you nothing but the cream!

No dilly-dallying. No editorial frills or fixin's. Good, live, clean talks. Farm facts by experts. Household helps and practical, money-saving suggestions for Mother. Always enough first-class reading to interest *every* member of the family. Send $1 for 5 years' subscription. Money back any time. Or ask for free sample copy and *your* Poor Richard Almanac for 1917. It's free, too!

The Farm Journal

201 Washington Square, Philadelphia

The Double-Walled Massie Bee-Hive

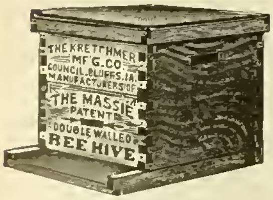
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

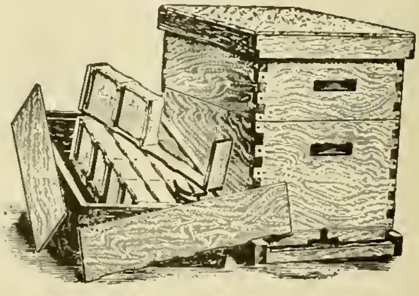
Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



THE MASSIE HIVE

For Comb or Extracted Honey



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

Prices of Combless Packages Without Queens*

Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3 lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4 50	" 6	8.00
" 12	8.00	" 12	15.00
100	65.00	100	100.00

Select tested, $2.00; breeders, $4.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders the day they are due. We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States, and Canada. Place your orders early, as first comes first served. Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

PURE MATING GUARANTEED—QUALITY FIRST

I am better equipped to take care of all orders, both LARGE AND SMALL, having located my queen and package business in Georgia. Our mail and express service is excellent, having 24 out-going trains DAILY—will make delivery same day order received.

Will be glad to hear from parties wanting LARGE QUANTITIES, as I am prepared to handle any size orders—will be glad to furnish sample of my combless package—will guarantee safe arrival in United States and Canada. Get my prices on 100-pound lots, and over my price will make you order from me.

Prices on Queens for March 15th to May 1st delivery.

	1	6	12
Untested	$1.50	$ 7 50	$12 00
Tested	2.00	10 50	18.00
Select Tested	3.00	15 00	24.00

Breeders, $5.00 and $10.00

Prices for bees by the pound without Queen begin April 15th.

	1	6	12
1-pound	$1 50	$ 8.00	$15.00
2-pound	2.50	14.00	27.00
3 pound	3.25	18.50	35 00

Prices of nuclei without Queens begin shipping April 15th.

	1	6	12
1-frame	$2.00	$10 50	$18.00
2-frame	2.50	12 00	22 00
3 frame	3.50	20.00	37.00
5 frame	5.00	23 00	44.00

J. E. MARCHANT BEE & HONEY COMPANY. Columbus, Georgia

TYPEWRITER SENSATION

$2.50 a Month Buys a Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.

H. A. SMITH, 314-231 North Fifth Avenue, Chicago, Illinois

CIRCULAR SAW MANDRELS AND EMERY WHEEL STANDS

Mandrels with boxes and pulley complete for bolting our frame. Three sizes. Circulars.

CHAS. A. HENRY, Eden, N. Y.

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

As we are large honey producers as well as queen breeders, producing from one to two carloads of honey annually, we have ample opportunity to test out our breeding stock, used in our queen yards Thus we are able to guarantee that all our queens will give satisfaction in every respect. If you want bees that are gentle as well as great honey getters let us book your order. Safe arrival guarranteed.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1 20 each; 2-lb pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3 20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested	75 cts. each; $65.00 per 100	Tested	$1 25 each; $110.00 per 100
Select untested	90 cts. " ; $75.00 " 100	Select tested	1 50 " 125 00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

QUALITY

For fifty years Root Goods have held their pre-eminence. Why has this been so? Why have we been able to maintain a series of service branches and agencies all over the United States?

The answer is self-evident. Beekeepers always have and always will order their GOODS from the concern which offers them

QUALITY PLUS SERVICE

Send your order to the Branch or Agency nearest you and get low freight rates and prompt service. Order early as all prices are advancing.

The most up-to-date goods, the best that money can buy, are shown in our NEW 1917 CATALOG, which is all ready for mailing. Send for one today. A postal will bring it.

The A. I. Root Company, Medina, Ohio

SERVICE BRANCHES AT

New York City, 139 Franklin St.
Chicago, 215 West Ohio St.
Philadelphia, 8 Vine St.
Washington, 1100 Maryland Ave.
St. Paul, 290 East 6th St.

Des Moines, 915 Walnut St.
Syracuse, 1631 West Genesee St.
Indianapolis, 859 Mass. Ave.
Los Angeles, 948 East 2d St.
San Francisco, 245 Mission St.

MARSHFIELD GOODS

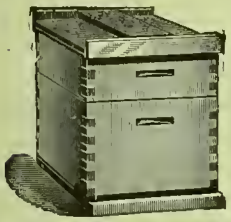
BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin



EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

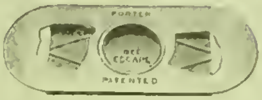
LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

DON'T WAIT TILL SPRING

Before having your beeswax made into foundation or to buy supplies. Prices were never more unsettled. Better take advantage of present low prices and early order discounts, by ordering now.

Write for prices and discounts.

GUS DITTMER COMPANY
Augusta, Wisconsin



PORTER BEE ESCAPE SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

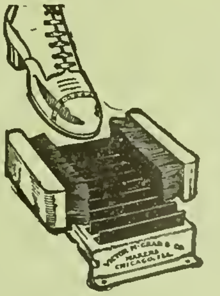
Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

Our 1917 catalog of Bee Supplies will be ready this month It is free. Write us for one. 64 pages full of information about hives, etc., pertaining to the apiary. We handle the best make of supplies for the beekeeper. Beeswax taken in exchange for supplies or cash

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri



GET A FOOT SCRAPER FOR YOUR HOME

We still have a small stock of foot scrapers like cut on hand. Although these scrapers cost, postpaid, $1.00, we will send them out on your order at a postpaid price of 75 cents. Write today

AMERICAN BEE JOURNAL
Hamilton, - - Illinois

CYPRESS LASTS PRACTICALLY FOREVER

CYPRESS BY TEST
Substitutes by Talk
THE PROOF?—2 LETTERS FROM BEEMEN:

CYPRESS "THE WOOD ETERNAL"

"Our correspondent makes serious complaints against·········and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter," (Etc.)—and here's another:

Mr ———, of ———, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE BOTTOMS."

Is there value to you in an endurance test of 49 years in greenhouse sash? It is reported to us that sash made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868 are STILL DOING SERVICE.

IT WILL SERVE YOU AS WELL and save you the nuisance and expense of repairs and replacements.

The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you to an endurance test of 30 or 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good ordinary business sense.

WRITE US FOR VOL. I. OF THE FAMOUS CYPRESS POCKET LIBRARY WITH FULL U. S GOVERNMENT REPORT ON "THE WOOD ETERNAL"

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Heard National Bank Building, Jacksonville, Fla., or
1251 Hibernia Bank Building, New Orleans, La.
For quick service address nearest office.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

WE WANT YOUR

BEESWAX

For cash, in exchange for BEE-SUPPLIES or to be Worked into

DADANT'S FOUNDATION

Drop us a line stating how much beeswax you have and we will quote our prices f. o. b. your station or delivered here. Or we will name you our best trade price and tell you how much it will cost to have it made up into foundation.

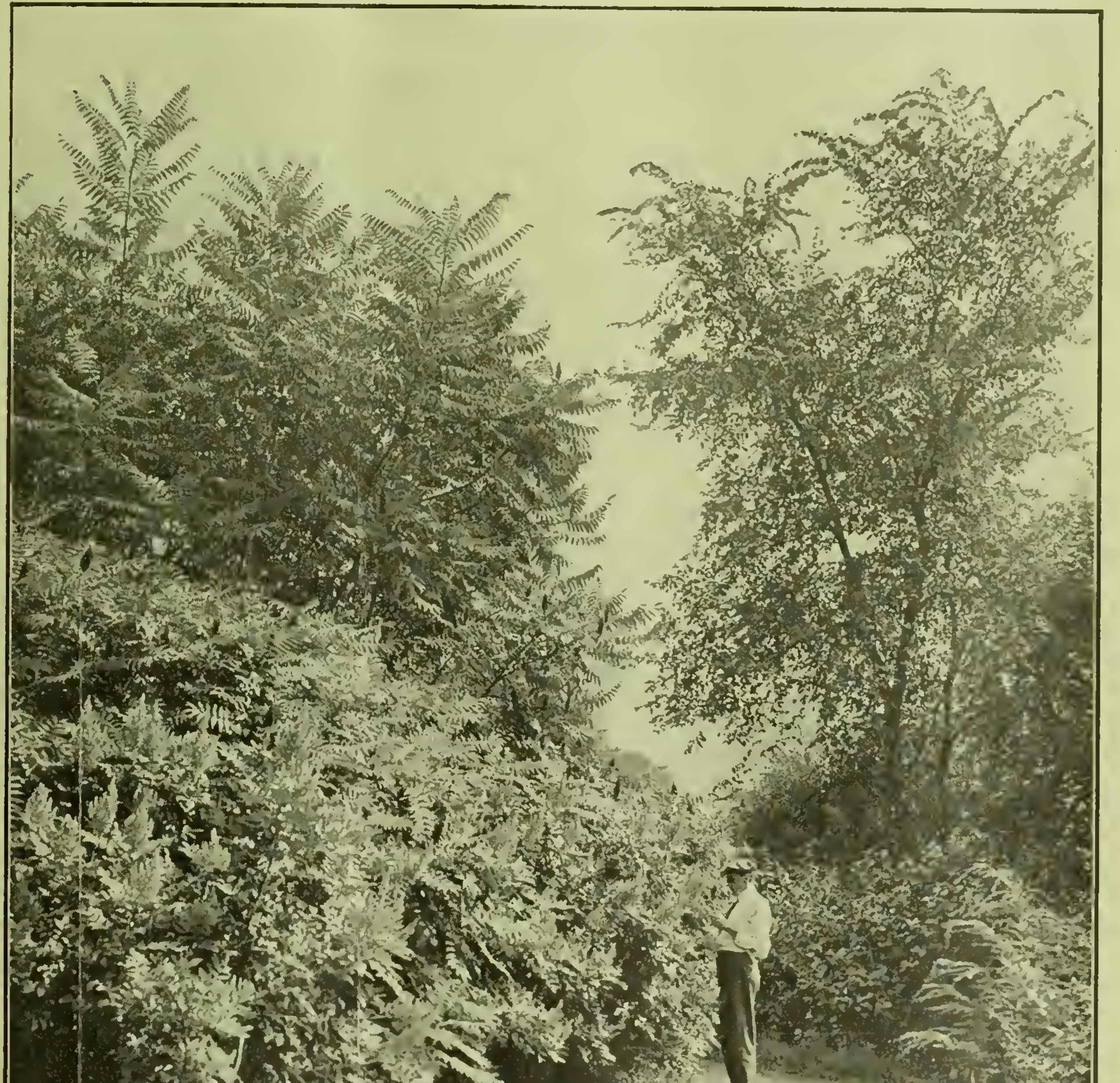
Dadant's Foundation is sold by many dealers all over the United States. There is probably one near you. Mail us that card or letter today.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

MARCH, 1917

College



The Tall Sumacs Planted by this Tall Massachusetts Professor Four Years Ago

ARCHDEKIN'S FINE ITALIAN QUEENS AND COMBLESS BEES

April, May, June queens warranted purely mated, $1.00 each; six for $5.00; per doz., $9.00. Bees per lb., $1 25. With untested queen, $2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

J. F. Archdekin Bordelonville, La.

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association
1424 Market Street, Denver, Colo.

BARNES' Foot-Power Machinery

Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

BUY

THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for circular and Price list.

BEN G. DAVIS
Spring Hill, Tennessee

ITALIAN QUEENS AND BEES

I am better able to supply the trade with my Three-band Italian Queens, Colonies and Nuclei than ever before. Send for circular and prices.

E. A. Leffingwell, Allen, Michigan

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in May, June and July at the following prices, viz.:

Prices 1 and over	FROM PENN, MISS. 1	6	12	25 to 100	FROM TORONTO, ONTARIO. 1	6	12	25 to 100
Untested	$ .85	$4 50	$8.00	$ .65 each	$1 00	$4 80	$ 9 25	$ .75 each
Warranted	1.10	5.00	9.50	.75 "	1.35	5 80	10.75	.85 "
Tested	1.50	7 50	13.50	1.05 "	1.75	7.80	14 75	1.15 "
Breeders	3.00 to $10.00 each.				3 00 to $10 00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

	FROM PENN, MISS. 1 to 5 each	6 to 25 each	over each	FROM TORONTO, ONTARIO 1 to 5 each	6 to 25 each	50 over each
1-pound and Queen	$2 25	$2.00	$1.00	$3 00	$2.75	$2.65
2-pound and Queen	3.00	2 75	2.65	4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO, ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us.

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

Bee Supply Department

Orders shipped day received

Our warerooms are loaded with Lewis Beeware

Everything at factory prices

Send for catalog

Wax Rendering Department

We do perfect wax rendering. It will pay every Beekeeper to gather up all his old combs and cappings and ship to us. We charge 5c a pound for the wax we render and pay the highest cash or trade price.

THE FRED W. MUTH COMPANY

(The firm the Busy Bees work for)

204 Walnut Street, - - CINCINNATI OHIO

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal.

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subsciption price postpaid.

Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year

Sample copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

NATIONAL Gets Big Hatches

Peter Kilpatrick, Nazareth Pa., writes, "Have made better hatches than anyone here." **Money cannot buy greater hatching value.** Hot water heat—double wall—dead air space—asbestos lining—self regulating—ventilating—double glass doors—safety lamp—egg tester. **No extras to buy**—easy to operate—will not warp or shrink. Strongest, most durable Incubator made.

40 DAYS TRIAL

12 Years Guarantee

165 Egg Incubator

Only $10

Freight Paid East of Rockies

Take no chances. The National is built on U.S. Government specifications. A proven cold weather hatcher. The World's Greatest Incubator Bargain. Send postal today for **Free 1917 Catalog And Poultry Book**—worth dollars to every poultry raiser—or order direct from this ad and save time. **Incubator and brooder both prepaid $12.50.** Comes set up ready to run, with book of instructions. You take no risk, **satisfaction guaranteed or money refunded.** Don't delay. Send for Poultry Book today sure.

NATIONAL INCUBATOR CO.
Box 116 Racine, Wis.

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois

THE QUEEN OF ALL QUEENS

Is the Texas Queen, Italian Goldens that will please you in every way. 75 cents each, $8.00 per dozen. Circulars free.

GRANT ANDERSON
Rio Hondo, Texas

PATENTED

WRIGHT'S FRAME-WIRING DEVICE

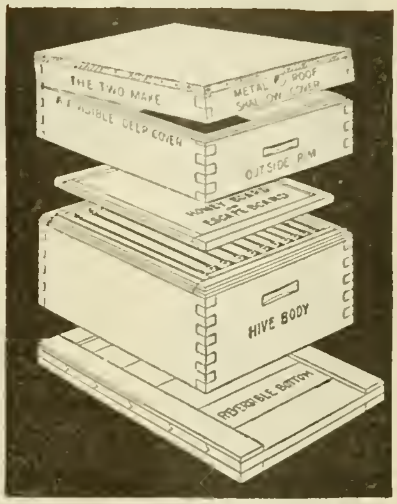
Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

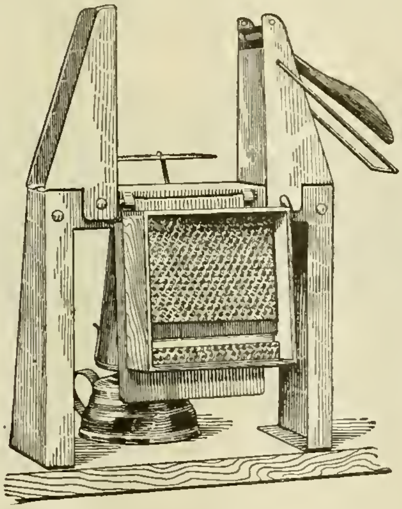
PROTECTION HIVES

Price, $13 75 for five hives; $12.00 without outside rims, f. o. b. Grand Rapids. $15.00 for five with rims delivered to any point in the U. S. A. north of the Ohio and east of the Mississippi Rivers. Double wall with air spaces, insulation or packing as you may prefer. If you have had occasion to spend any time in a building single boarded during cold weather, you can appreciate the advantages of double walls. Single wall hives often do not provide sufficient protection during brood-rearing in the spring.

An apiary of single wall hives was visited during fruit bloom, the weather was cool and and no bees flying. Old newspapers were called for and the wrapping of the hives was about half completed when there was an interruption. Returning again in the course of an hour or so, it was found that the bees in the wrapped hives were flying freely, while those that were not, still remained inside the hives. It is reasonable to conclude that if 20,000 bees were required to keep up the temperature, that 5000 were released for field and other duty by the added protection given. Protection Hives cost only about $1.00 more than single wall hives and are well worth the extra cost, which may be more than made up in a single season. Send for a special circular—16 large illustrations.



A. G. WOODMAN CO., Grand Rapids, Michigan



SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

H. W. Schultz, of Middleton, Mich., in writing us says: "Your Section Fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp $2.75. Shipping weight 5 lbs. Postage extra. Send for special circular, fully describing this machine.

A. G. WOODMAN CO.,

Grand Rapids, Michigan

TIN HONEY PACKAGES

A local wholesale house secured a carload of tin plate in September that was promised for April. Conditions are now even worse. When it is necessary to order tin plate a year or more in advance of the time it is wanted for use, advances in prices must be expected. The highest bidder will get the stock.

Freight at this time is very slow and uncertain. Prices are liable to advance. It would be a wise thing to secure your packages for the 1917 crop. Our three-year contract is giving us some advantage over general market quotations. Send us a list of your requirements at once; our prices may have to be advanced again on March 20. We can supply the following:

60-pound cans, one and two in a case

Friction Top Tins

	2 lb. Cans,	2½ lb. Cans,	3 lb. Cans,	5 lb. Pails,	10 lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. Woodman Co., Grand Rapids, Mich.

BEE-SUPPLIES of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.

J. W. ROUSE, Mexico, Missouri

SELECT ITALIAN BEES

by the pound. Nuclei QUEENS. 1917 prices on request. Write,

J. B. HOLLOPETER, Rockton, Pa.

Write for price list and booklet descriptive of our

HIGH GRADE ITALIAN QUEENS

And Bees by the Pound

JAY SMITH
1159 DeWolfe St.
Vincennes, Indiana

DADANT'S FOUNDATION

DADANT'S FOUNDATION

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WE ANNOUNCE AN ADVANCE

Of 5c per pound on comb-foundation. This advance applies to all our 1917 price lists. On account of the high price of beeswax, we are compelled to withdraw our former quotations.

For beeswax, we will now pay 35c in cash or 37c in trade f. o. b. Hamilton, or Keokuk, Iowa. Prices of beeswax and foundation are, of course, subject to change without notice.

Save your beeswax and ship it to us to be worked into foundation for you. Send us your old combs. They are worth good money now, and we will get every ounce of wax out of them and pay you the above prices for your share of the wax.

DADANT & SONS,
HAMILTON, ILLINOIS.

Three-Banded Italian Queens

I am now booking orders for early spring delivery of queens at one-fourth cash and the balance when the queens are shipped. Send in your order now and get your queens when you want them.

PRICES APRIL 1ST JULY 1ST

	1	6	12
Untested	$ .75	$ 4.25	$ 8.00
Select untested	.90	5.00	9.00
Tested	1.25	7.00	13.00
Select tested	2 00	11.00	20.00

After years of careful selecting and breeding, I now have my stock bred up to a very high standard. THEY ARE BRED FROM IMPORTED STOCK, the very best in the world for honey gathering and gentleness. They are not given to swarming.

GUARANTEE that every queen will reach you in first-class shape to be purely mated and to give perfect satisfaction.

All queens that do not give satisfaction I will replace free of charges or return your money.

L. L. FOREHAND, Ft. Deposit, Alabama

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for April, May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10 00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1 frame nuciei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above. Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex.

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This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars $5.00 a gross.

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Three-Banded and Golden Italians

The secret of success in beekeeping is to keep your colonies strong. To do this you must have good healthy laying queens Untested, 75c; 6, $4 25; 12, $8.00. Select untested, $1.00; 6, $5.00; doz., $9.00. Tested, $1.50; 6, $8.00; doz., $15. Select tested, $2.00. Safe delivery guaranteed.

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Bee Supplies Possible

The "Falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "Falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "Falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "Falcon" supplies if you will send us an approximate list of what you will require for the coming season.

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We carry a large and complete stock of bee supplies, and are prepared to give you prompt service. We have just received several carloads of new fresh supplies. Send for our catalog.

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1917 Queen Prices
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Send for new 1917 price list, now ready. Give us a chance to bid on your wants. We can save you money. We are in the market at all times for extracted honey in any quantity.

THE M. C. SILSBEE CO.,
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HIVES, SUPERS AND SECTIONS

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 3 HAMILTON, ILL., MARCH, 1917, MONTHLY, $1.00 A YEAR

HOUSE APIARIES

Advantages and Disadvantages of the System as Seen by Frank C. Pellett on a Visit With F. J. Strittmatter

FOR years I have been interested in house apiaries. The idea attracted me although I never had experience with one. Whenever I have raised the question of the possibilities of the house apiary all the argument has been against it. To quote Doctor Phillips, "The principal argument against house apiaries is that nobody uses them." One champion of the house apiary in this country is F. J. Strittmatter of Ebensburg, Pa., and it was to him I went for first hand information about this system.

When asked how he came to use the house apiary in the beginning, Mr. Strittmatter said that it was because he could see advantages which overbalanced the objections raised against them. He could find no encouragement in any quarter. He was told that nobody used them in this country and was advised to experiment carefully, with the expectation that the plan would not prove satisfactory. He built his first house apiary in the spring of 1910, and at the same time started an outyard in chaff hives. The first three years the bees in the house apiary made a little better showing and were much nicer to handle, since in the building he was independent of unfavorable weather. After three year's trial with one house apiary and two outyards he decided to put all the bees in house apiaries, and now after four years with all in house apiaries, he is fully convinced that for his climate the house apiary is much to be preferred.

OBJECTIONS TO HOUSE APIARIES.

That this is not a new subject in this country will soon become apparent upon referring to the old bee journals. In the American Bee Journal for March 1861, in a report of the first American Beekeepers' convention, there is a discussion of this same question.

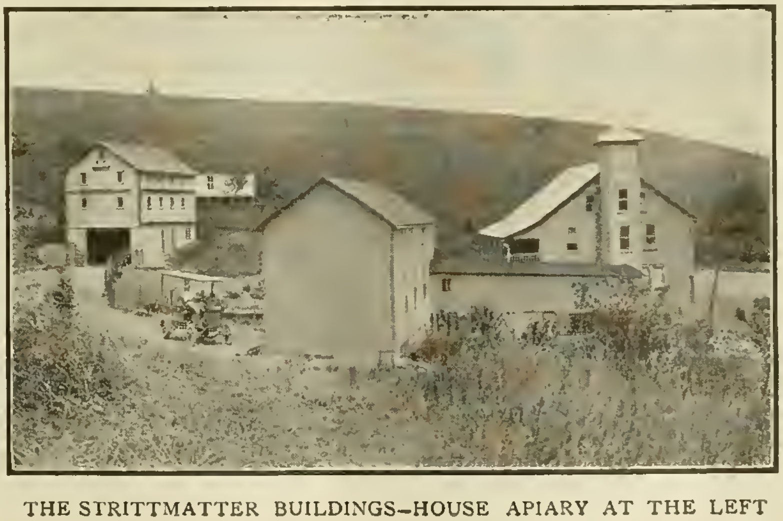
"Mr. Langstroth considered that bee houses were not the best for the apiarist, principally from the loss of young queens when they leave the hive for the purpose of meeting the drones, as they are apt on their return to enter the wrong hive, and be there killed, and the consequent decay of the queenless swarm; giving a great number of instances of this. He would say to all, **scatter your bees;** place one hive under this tree and another under that, but **scatter the hives.**"

The above quotation from Langstroth presents the most serious and most persistent objection to house apiaries. A friend of mine who lives in Minnesota tried a house apiary and abandoned it because the bees were too slow to get out in the morning. However, his building was situated among the trees instead of in the open sun as it should be.

With the entrances as close as they must be in a house apiary, there is some mixing of bees and some drifting from hive to hive after a long confinement. Another objection is that where so many hives are placed on the same floor there will be some tendency to irritate the bees in other hives while one is working in any part of the building, because of the jar. In a well made building such as Strittmatter uses, there would be very little apparent jarring from the ordinary operations necessary.

ADVANTAGES OF THE SYSTEM.

Several advantages will at once be apparent. In the first place since there are no bees flying about the operator except from the single hive which is open, necessary work may be attended to at any time without danger of robbing, and with greatly reduced annoyance from stings. The bees which fly out of the open hive usually fly to the windows and seek to escape to the open air, so that even the colony manipulated offers



THE STRITTMATTER BUILDINGS—HOUSE APIARY AT THE LEFT less resistance in a building than outside. When the bees fly out, the surroundings are unfamiliar to them and they lose the desire to sting. Strittmatter cuts a small corner of each window-pane in each of the four corners of the sash, to permit the bees to escape.

Another important advantage is the control of swarming, which is a very simple matter under these conditions. Some years there have been no swarms in the Strittmatter house apiaries, as all that seems to be necessary to control swarming entirely is to give the bees plenty of room, and retain young queens.

In the same report from which the quotation from Langstroth above mentioned is taken appears the following:

"Mr. Sturtevant uses a large bee-house but does not allow the bees in it to swarm, but always divides his swarms, taking the queenless swarm away from the apiary, and if desirable returning it to the house after the queen is fecundated. * * * Hives must not be placed on a common level, where they can run from one to another. His bees had laid up an immense quantity of honey the last season; the house is airy and cool, built of brick. Hives should face in different directions."

Strittmatter tries to have young queens mated from the corner hives and reports that he has little more trouble from the loss of young queens in the building than in the hives outside. He has the fronts of the hives painted four different colors, which helps materially to keep the bees from mixing or the queens from going astray.

Another advantage is the protection against changing weather conditions of spring, and, in wintering. The brood chambers are built in with four inches of sawdust packing surrounding each hive. This additional protection enables the bees to build up rapidly in spring, as there is no danger of chilled brood because of a sudden drop in temperature outside. The winter preparation, also, is but a matter of a few minutes. When the honey is taken from the hive in the fall all that is necessary is to see that the colony is in proper condition for winter and to put the cover in place and throw the quilts or other top packing over the tops of the hives. The cost of winter cases and the labor of annual packing is saved by this plan.

Rainy days are no hindrance to work, as it is possible to remove the honey inside a house apiary with a minimum of discomfort at any time

HOUSE APIARIES OF OTHER DAYS.

After paying a visit to Mr. Strittmatter and seeing how enthusiastic he is over the house apiary after seven years of trial, I have been much at a loss to determine why they are not more generally used. Many well known beekeepers tried them in the early nineties and the journals for several years were full of enthusiastic accounts of successfully conducted house apiaries. In this connection a review of the principal suggestions of a few of these articles may be of interest. In the Beekeepers' Review for September 1892 an article by E. R. Jaques describes the B. Taylor house apiaries at Forestville, Minn. From this article I quote as follows:

"The first point scored by the house bees over those in the yard was this—they built up faster in early spring thus becoming strong in numbers in time for the clover harvest. * * *

"It is much more comfortable in the house, out of the hot sun with all your supers, honey-boards, bee escapes and the like on shelves in easy reach. Then, too, you will not be troubled as much with robbers and will have little use for smoke and veil; for however cross a bee may be out-of-doors she becomes a lady in the house. * * *

"On the other hand I think the house queens will be much more apt to get lost on their mating trips. * * * The lifting of hives and supers will be found heavier work in than out of the house.

"Now for results in honey gathered to date (July 24th). Twenty colonies in the house have 100 pounds each of comb-honey in the supers, while twenty of the best colonies in the yard have stored but 75 pounds each.

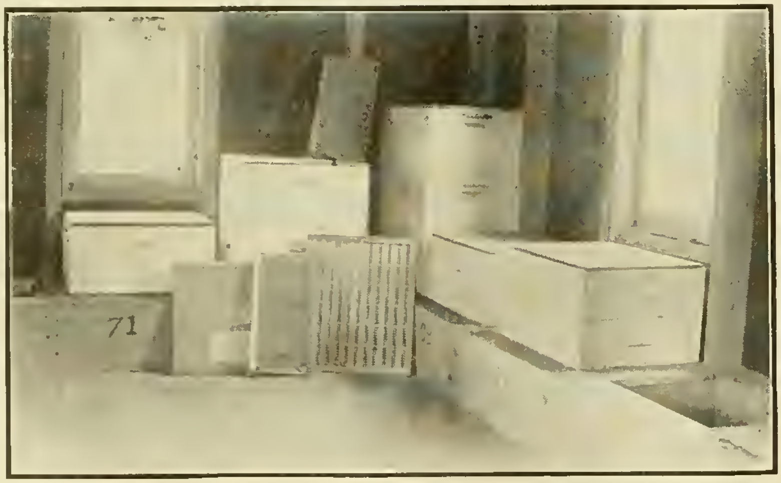
"I think the house apiary has come to stay but do not believe it will be a success except in the hands of a skilled apiarist."

During the year 1891 the Review contained several articles on house apiaries and nearly all reporting favored their use. In the July issue, J. P. Moore, of Binghampton, N. Y., reported having used one for 19 years. Mr. Moore described the house somewhat in detail and gave rather flattering accounts of its advantages. One item is of especial interest:

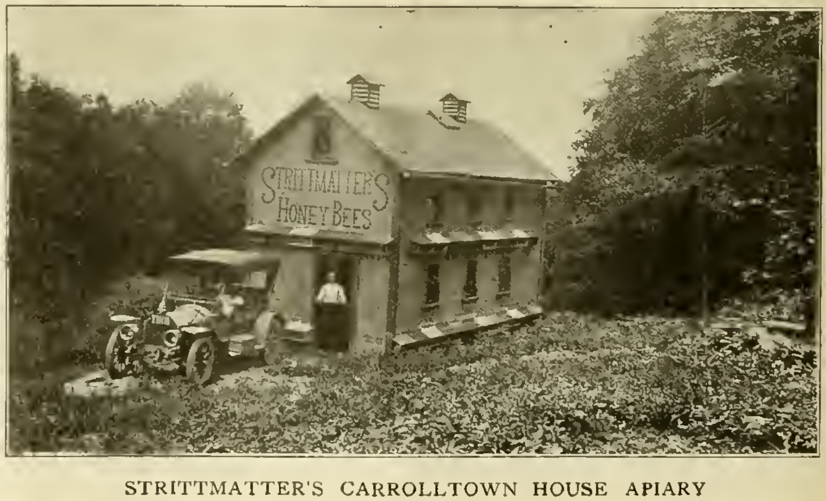
"In spring as soon as the bees begin to raise brood, the temperature of the house rises and it is readily seen that many weak stocks that would be of no value outside are enabled to breed up, on account of the temperature maintained by the other bees.

Not all reports were favorable, however, as witness the following from J. B. Hains of Bedford, Ohio:

"At the outset I desire to say that I regard the house apiary as worse than useless and a very expensive establishment to keep up. * * * In the year 1879 I erected a house apiary, fitted it up in the most modern style, put in 48 colonies of bees which wintered fairly well but dwindled so in the spring, especially on the north side, that I was compelled to draw on the yard apiary to make them good.



INTERIOR OF HOUSE APIARY SHOWING BUILT-IN HIVES WITH SUPERS



STRITTMATTER'S CARROLLTOWN HOUSE APIARY

I secured about half as much honey from the house apiary that season as I did from the hives outside, but was unwilling to abandon the experiment. The second spring was a repetition of the first. * * * The loss of bees is a small matter compared to the loss of labor in caring for them."

James Heddon reported two years experience with a house apiary that was a practical success. He answers the objections raised against it rather convincingly and sums up the advantages thus:

"The house apiary possesses some splendid advantages. Out of the sun, out of the rain, out of the wind, out of the reach of thieves, implements and bees close together, and last but not least out of the reach of robber bees. * * *

"On the whole, I think the house apiary, when rightly made and managed, is, in many localities a thing of comfort and profit."

Mr. Heddon cited the oft repeated objection of loss of queens from entering the wrong hive and admitted having more queenless colonies in the house apiary than outside.

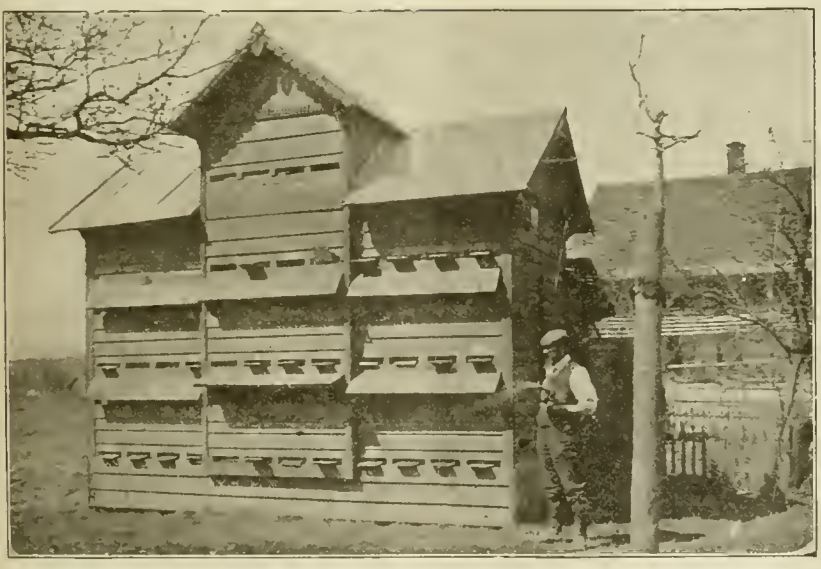
As far as cost is concerned there are numerous reports to the effect that a house apiary large enough to serve as a combined work house, honey room and apiary, can be built as cheaply as the usual equipment for an apiary can be had, including the necessary building.

After referring to all reports which I have been able to find in the old Journals, I am inclined to believe that some of the trouble arose from building the houses too small and too dark. Strittmatter provides plenty of room and an abundance of light. While there were numerous reports of loss of queens, this objection seems not to be an insurmountable obstacle as some report satisfactory results after many years of use. Apparently, however, expert attention is necessary in order to succeed with bees in house apiaries. Heddon advised against the built-in hives, but adjusted his hives to special entrances in the house. It was thus possible to take hives containing queencells to the open air and leave them until the queen had been mated, after which they could be returned to the house. Since swarming is much easier to control within the houses, the amount of moving that would be necessary would not be great. This is, of course, impossible with the Strittmatter system of built-in hives.

Since house apiaries are in general use in many parts of Europe, they surely must be suited to certain conditions. While there are few apiaries there conducted on a large scale followed by many producers in America, we may still learn many things from beekeepers across the sea.

EAT
GOOD
HONEY

HOUSE APIARY OF E. C. BARBER, AT FRAMINGHAM, MASS., WHICH THE OWNER REPORTS AS QUITE SUCCESSFUL



ONE OF THE WARTMAN HOUSE APIARIES AT BIENNE, SWITZERLAND

Beekeeping in Sweden

BY JOHN A. JOHNSON.

"Bitidningen," the Swedish bee journal, official organ of the Swedish Beekeepers' Association.

IN the annual report given in the January, 1916, number, we find that the association had a membership of 5016; a fine showing indeed for a country of Swedens' location and population. If the National Beekeepers' Association would obtain a proportionate membership we would number over 100,000 members. Their organization is in a flourishing condition and was formed after the German and Swiss associations, the local or district association "Krets," is subordinate to the National.

They have an official label for the honey of members, and each "Krets" is responsible for the purity, cleanliness, and quality of the honey of its members when offered under the association's label. They also established the price for which the honey shall be sold. They are vigorously fighting honey adulterations, and try to show the inferiority of glucose concoctions which masquerade before the public as honey. Unfortunately the glucose manufacturers are allowed by law to use the name "Inverted honey" marked on their labels.

The association also does cooperative buying of some supplies, such as containers, cans, and sugar is gotten direct from the refiner for feeding purposes, even under the present abnormal conditions. The beekeepers receive respectable rebates from the refiners.

Honey was sold as low as one crown per kilogram (about 11 cents a pound) before the war, but now it is advertised as high as three crowns per kilogram (41 cents a pound). One dealer in Stockholm claims to have imported the finest white California honey from the Santa Clara district before the war for about 13½ cents a pound. The Swedish beekeepers resent the importation of foreign honey in competition with their own. Extracted and strained honey are produced almost exclusively.

There seem to be as many kinds and sizes of hives and ideas about the merits and demerits of the different hives as here. A large number of straw skeps are also kept as well as movable-frame hives with sides and ends of woven straw and a frame. Queen excluders made entirely from wood are advertised by the manufacturers.

A recipe for a very popular honey drink, more of a beverage than mead, is given.

Pomeroy, Iowa.

AMERICAN BEE JOURNAL
Established in 1861
Oldest Bee Paper in America

PUBLISHED MONTHLY AT
1st Nat'l Bank Bldg., Hamilton, Illinois

Entered as second-class matter at the Hamilton, Illinois, Post-office.
C. P. Dadant, Editor.
Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

The National Meeting

The National Beekeepers' Association met on Feb. 6-8 according to schedule. The terrific storms that raged through our northern States at that time prevented the attendance of a number of leading men. Neither E. R. Root, E. D. Townsend, Frank C. Pellett, Wm. Copenhaver, Morley Pettit nor R. A. Burnett were present. The papers to be read by these men were also missing.

However, Pres. Jager is a man of extraordinary resources and the meeting was rendered exceedingly interesting through his strenuous efforts. His address, showing the need of organization was spoken with great enthusiasm. He insisted upon the need of uniform packages for the sale of honey. He affirmed, as others have done before, that the beekeepers of America need union as much as the National canners and other associations placing an article of consumption before the public. Irregular packages must be abandoned and standard methods adopted, through a National Committee. He showed the need of securing uniform laws for the protection of producers against adulteration, misrepresentation and unfair competition. Organization of beekeepers throughout the land is indispensable.

Our old friend, N. E. France, addressed the meeting with words of welcome, with remembrances of the past. Mr. France is probably the only beekeeper State Inspector of bees whose office is permanently located in the Capitol Building of a State. He has proven so efficient that instead of opposing his work as is done in so many places, the State officials sustain it.

Doctor S. A. Jones, statistician at Washington, was present and explained the necessity of the beekeepers cooperating with the general government by furnishing statistics which will be collected together and returned to the producers, showing them exactly how much and where there is honey produced. National Committees should look after these reports and advise the beekeepers through the journals as to what prices to expect. An arrangement of this kind during the past summer would have helped to secure very much better prices for the producers. The attempts of the government have so far received but lukewarm response.

Doctor E. F. Phillips gave the audience an insight into the extension work undertaken by the government. He described conditions in such States as North Carolina, where two-thirds of the apiaries are still put in mourning when a member of the family dies. "Telling the bees" is still the custom. Each colony is moved a few inches on the anniversary of the birthday of Geo. Washington. The honey is taken up during the first full moon of June, as they do not think any other time is proper. The strange thing is that 52 percent of all the bees in the United States are located in 15 southern States and about 90 percent of these are still in gums or box-hives.

Doctor Phillips showed what a little missionary work will achieve, by saying that the famous Alexander, of Delanson, N. Y., came very near giving up beekeeping in disgust when his bees were attacked by European foulbrood. A 15 minute talk with the well known inspector, Chas. Stewart, caused him to remain attached to the pursuit and it was through his later experiments and success that the present method of successful treatment of European foulbrood was devised.

That we need organization in every State in the Union is quite evident. We are just at the "Forks of the Road," as so ably shown by Dr. L. D. Leonard of Minneapolis, Minn.

A resolution was passed heartily endorsing the extension work of the Department of Agriculture.

Wesley Foster gave a long talk on "Distribution of Honey." Uniformity of packages, choice of good reliable dealers in cities, closer acqaintance between producers and dealers, full information concerning crops and markets were some of the subjects touched by him.

Professor H. C. Taylor, of the University of Wisconsin, explained methods of bookkeeping for the producers, so they might positively learn where their profits and their expenses are.

Hamlin B. Miller, secretary of the Iowa Association, in his inimitable style gave a long talk on how to increase the membership of the association. His cry was, "Retain your present president." It was done, for Prof. Jager was re-elected. Polhemus, of Colorado, was elected vice-president and John C. Bull, of Indiana, secretary.

Mr. Herman Rauchfuss, of Denver, Colo., represented his brother and explained how the Colorado Honey Producers' Association having commenced with a capital stock of $110, years ago, have increased to a capital of $50,000 through perseverance and honest dealing.

George W. Williams, of Redkey, Ind., ably supported by Mr. Hassinger, an intelligent young beekeeper of Wisconsin, spoke interestingly about the necessity of teaching the uses of honey in the Domestic Science department of the common schools. A committee of the United Honey Producers is to work in connection with a similar committee appointed by the president of the National, on this subject.

In spite of the unfavorable weather the meeting was a great success and most of the beekeepers in attendance expressed their desire of being able to attend future meetings. The next location of the National convention is to be decided by the Executive Committee.

A more detailed account of the Madison meeting is just at hand from Pres. Jager. This will be published in the April number.

Prevention of Swarming

A large number of readers have expressed the desire to secure the address which the editor delivered last year at nine different conventions on the above named subject. So we will publish it in the April issue.

Our Market Page

On another page of this number we are beginning a department of "Crop and Market Conditions." The page itself will show just what we aim to do. A page of this kind will not succeed unless it has the cooperation of a large proportion of our subscribers, and we cannot, of course, afford to circulate our whole list each month to assemble such reports.

We would urge, therefore, that each subscriber secure a few postal cards and write us the conditions as seen in his section of the country. Make your report as brief as possible and address to "Market Editor," American Bee Journal. These reports should reach us at least by the 20th of the month to do any good for the next issue.

The department at Washington, for several years, has been gathering such statistics, but usually owing to the reticence of correspondents to answer reports, summaries of conditions come out too late to be most effective. We are, however, getting in touch with the department in hopes of embodying as much of its data as possible in our crop report each month.

The climatic conditions are such that the report from one section will be on the honey crop, while from another it may report the bees as they are just coming out of winter quarters. The points to be touched upon in answers are roughly as follows:

1. Condition of honey market—amount of honey unsold and demand unfilled?
2. What percent of loss of bees from wintering?
3. Honey-plant conditions compared to normal?
4. Are beekeepers increasing number of colonies materially?
5. Are many turning from comb to extracted honey?
6. How is the honey crop so far compared to last year?

Remember to give true conditions, not failing to report if the season has been a failure, or if beekeepers are discouraged from winter losses, as well as to report successes.

Come ahead with your answers, the more the merrier. Write on a post card, number your answers as above, write plainly and briefly, and address card to the MARKET EDITOR, American Bee Journal, Hamilton, Ill.

This department is simply an experiment. If it succeeds it will be because of the interest taken in it by the beekeepers.

Death of Edouard Bertrand

Our old friend, Mr. Bertrand, died in Geneva, Switzerland, Jan. 17, in his 85th year. We received the news of his demise through letters from both Mrs. Bertrand and Mr. Thomas Wm. Cowan, editor of the British Bee Journal, to whom Mrs. Bertrand wrote at the same time as to us. Mr. Cowan's letter reached me at the same time. I quote a few words of his letter:

"I am sure you will feel the loss, and for me it was a great shock, as it was only a few days before that I had received a letter from him dated Dec. 20, in which he spoke very cheerfully of his health......Bertrand and I have been constant correspondents now for 33 years, and had so much in common that, although he had attained a great age, the end is a trial which has grieved me much. He was a faithful friend, more as a brother, and during the whole time of our acquaintance we had never a disagreement. I was looking forward to the termination of this dreadful war to running over to Switzerland to pay him another visit, but now this is not to be, and I sorrow that I shall not see him again."

Mr. Bertrand was for 25 years editor of the magazine which he began under the name of "Bulletin D'Apiculture" in 1879, and later published as "Revue Internationale d'Apiculture." He is the author of several works on bees. We intend to devote a few pages soon to his biography. Meanwhile we can assure his devoted wife that the sympathy of the American beekeeping world is with her. Mrs. Bertrand has been a companion and an associate of her husband in his bee-work for 51 years.

Old Bee Books

In the first issue of the American Bee Journal, which appeared January, 1861, there appeared an advertisement of bee-books. There are seven books in the list, only two of which are still offered for sale. "Mysteries of Beekeeping Explained," by Quinby, and "The Hive and Honey Bee," by Langstroth, were so valuable that others have revised them and kept them up to date since the deaths of their authors, and both are now listed in nearly every catalog of bee-books. The rest of the list follows:

"Hive and Honey Bee," by H. D. Richardson.
"Beekeepers' Manual," by T. B. Miner.
"Bee Culture," by Henry Eddy.
"Beekeepers' Chart," by E. W. Phelps.
"Manual of Bees," by John M. Weeks.

Some of these books the writer never had even heard of until the advertisement in the old journal was read, and it is doubtful whether copies of all of them could be found in any one library. In order to live for 50 years a book must deal with fundamentals, for superficial matter is soon forgotten.

Obituaries

We are sorry to announce the deaths of J. Vandervort, Laceyville, Pa., Feb. 10, and D. C. Polhemus, of Lamar, Colo., Feb. 13.

Mr. Vandervort was the first man to manufacture foundation mills, making different thicknesses of walls for different weights, and in the eighties he made the first mills capable of turning out foundation over 12 feet to the pound.

Mr. Polhemus was a noted apiarist of Colorado, and his death followed his election as vice-president of the National Beekeepers' Association, after only five days.

These men both deserve a longer obituary notice, and we hope to be able to give it in our next number.

THE LATE EDOUARD BERTRAND, OF SWITZERLAND

No. 5.—Among Eastern Beekeepers

BY THE EDITOR.

As stated in my last article, I returned to Amherst Aug. 16, to meet Mr. Bocock, the English apiarist, microscopist and scientist, who is making a special study of adult worker-bee diseases. Mr. Bocock had visited the West and had just returned to New England.

Most of our readers know of the dreaded disease called "Isle of Wight" or "Microsporidiosis," but few of them know that 80% of the bees of the British Isles have been destroyed by it. It started in 1904, in the southeast corner of the Isle of Wight, reaching the nearest parts of the main land in 1909, spreading across it in the direction of the prevailing wind.

"Nosema apis" discovered by the German, Dr. Zander, in 1909, is thought to be the cause of the disease, as it is found in large numbers in the intestine of the diseased bees. Most of us have thought that what is here called "bee paralysis" was the same disease. But aside from the fact that "nosema apis" is not usually found in cases of bee paralysis, Mr. Bocock holds that the symptoms are different. In "Isle Of Wight" there are none of the tremulous motions seen in the other disease which are responsible for the name given: "paralysis". The bees simply drag themselves out of the hive unable to fly, and die by the thousands, in front of the hive. By a singular coincidence, this trouble was seen at the Amherst experimental apiary shortly after the arrival there of Mr. Bocock, in June. But it did not last and when I came all symptoms of it had disappeared. Nosema apis has been found in healthy bees in the United States and it is probable that the climate has something to do with its wide spread in England. The bees diseased with paralysis rarely discharge their feces, and for that reason the disease has been called "constipation", but in Isle Of Wight disease Mr. Bocock stated to me that diseased bees could often be induced to discharge the contents of their abdomen by simply touching them with a blade of grass or a light stick.

Mr. Bocock is authority for the statement that, within a radius of 10 miles of Cambridge, England, more than 5,000 colonies of bees have died of that disease in the past 10 years. He says that Italian bees make a better fight against it than the common bees.

As to a remedy, none of positive efficacy has yet been found, although several claims to the efficiency of "bacterol", "izal", and "dioxogen or peroxide of hydrogen" have been made in the British Bee Journal. Mr. Bocock was very careful and conservative in his statements, as all scientists are, and confined himself to the assertion that no remedy that he knew of was as yet proven efficacious.

Since the above was written, some interesting information has been furnished in Australia, concerning Nosema apis. Investigations made and reported in the December number of the "Australasian Beekeeper," page 105, indicate that this parasite is "present in almost every apiary, that even wild bees in trees are affected, that it is merely a casual inhabitant of the alimentary canal of the bee." Yet the diseases ascribed to Nosema in Europe have but little force in Australia, probably owing to climatic conditions, "the drier atmosphere and the greater heat of the sun during the summer arresting the progress of the disease." It is also held that, owing to the universal presence of the parasite in question, it would be "hopeless to attempt the eradication of the disease by destroying the infected combs and bees."

Mr. Bocock himself expresses doubts concerning the actual influence of Nosema apis in adult bee diseases. He wrote me under date of December 13:

"I am sending you by a later post Part I of Volume XX of the Proceedings of the Royal Physical Society in which you will find two papers dealing with researches and experiments in the matter of I. O. W. disease that have been conducted in Scotland. The investigators seem to have reached about the same con-

Prospect Pine—Jacob's Ladder Roadway at Becket, Mass.

P. E. Crane
Son and partner of J. E Crane, with his little daughter

MR. BOCOCK AND THE EDITOR DISCUSSING ISLE OF WIGHT DISEASE NOSEMA APIS AT THE AMHERST EXPERIMENTAL APIARY clusion as myself, viz: that it is doubtful if Nosema apis is the causal organism of I. O. W. disease".

The Bulletins mentioned had already been received by me from Mr. John Anderson, of the North of Scotland College and were given a mention in our January number, page 11.

Mr. Bocock is also a student of foulbrood in its different forms. He described to me and illustrated a method of recognizing European foulbrood, which he obtained from our Dr. White, by examining the alimentary tract of the larva. In a healthy larva the duct which runs through the insect is of a dark color. In European foulbrood the alimentary duct is white with the "bacilli pluton" which are thought to cause its death. In sacbrood these would not exist.

The reader will readily understand with what interest I listened to the explanations of so able a student. Mr. Bocock came to the U. S. May 21 and was to leave August 26 for his home in England. It was a treat to meet him.

On the front cover of this number of the Journal, the reader will see a photo of the tall sumacs of New England. Those shown were planted in 1912 by Dr. Gates and were therefore only 4 years old. Three kinds are shown, of different height and blooming at different dates. No wonder sumac is a productive honey plant there. We have no such results in the Middle West although sumac is plentiful in spots.

The grounds about the Experimental Apiary of Massachusetts have been supplied with all sorts of honey plants and shrubs by Dr. Gates. The bees were working plentifully upon the clethra alnifolia and we were lucky enough to catch a pretty photograph of this.

Two days later I retraced my steps in the direction of New York City, stopping on the way at Stamford, Connecticut, to spend the week-end with our old friend, L. C. Root, whom I have already mentioned in this tour and who had eagerly invited me to visit him. He was at the station when I arrived there.

L. C. Root, son-in-law of Moses Quinby, who was a contemporary of Langstroth, is one of the greatest enthusiasts I have ever had the good luck to meet. During his entire life, whatever he has done has been done with zeal and earnestness. He revised the "Mysteries of Beekeeping" of Quinby and the book is called "Quinby's New Beekeeping". For years he was one of the largest beekeepers of New York State. For the past 25 years, more or less, he has retired from active beekeeping, leaving his apiary in charge of his brother and settled in Stamford, living with his two daughters one of whom is a physician of note. He keeps only a few colonies of bees in the city, in the attic of his barn, where I saw them. But as energetic a man as he could not remain long idle. So he was entrusted with the duties of Milk Inspector for Stamford. He was the first inspector to prepare a bulletin in which each dairy was separately reported and its sanitary conditions carefully detailed. The result was a host of friends and some enemies, for the unsanitary establishments could not be pleased with a truthful record, while the mothers and housekeepers were thankful for the straightforward information which his bulletins gave.

It happens that Dr. Root, L. C. Root's daughter, is the family physician of the H. L. Cooper people. Mr. Cooper is the world-renowned hydraulic engineer who built the big dam between Keokuk and Hamilton, across the Mississippi, the largest

Broad Street Bridge, Looking North, Stamford, Conn
216278

A VIEW AT STAMFORD, CONN.

A FIELD OF CLOVER IN BLOOM AT AMHERST, MASS.

L. C. Root
Reviser of Quinby's "Mysteries of Beekeeping"

power dam in the world. His business office is in New York City but he lives at Stamford, and they are very intimate with the Roots. The building of the big dam in 1910-13 with which I was connected, during the years of its promotion, has caused us to become well acquainted with the Cooper family.

When she heard of my arrival, Mrs. Cooper kindly sent her big touring car for Mr. Root and myself to visit the suburbs. Stamford is only 35 miles from New York and is the home of thousands of "commuters", business men who want quiet homes for their evenings and holidays. It is on the shore of Long Island Sound and has beautiful resorts in healthy locations. We rode about its avenues until we accidentally reached Sound Beach, a suburb, and the home of our old friend E. F. Bigelow, editor of the interesting magazine "The Guide To Nature". He welcomed us heartily and showed us all about his place, a wilderness of 5 acres which he has allowed to go "back to nature" so that one might think himself away from civilization, when in the heart of it, were it not for the familiar sounds of a busy railroad center. Mr. Bigelow will be remembered by our readers as having furnished us some of the prettiest photos that we ever published. Several of them have appeared on the cover of the American Bee Journal in the past.

THE ARTIST HAS CAUGHT THREE BEES ON THE BLOSSOM OF THE CLETHRA ALNIFOLIA

As many as six bees were noticed on a single blossom t one time—(See page 85)

The three days I remained in Stamford were spent very pleasantly, in visits about the city, with Dr. and Mr. Root, a delightful Sunday dinner with the Coopers, at their home on one of the finest avenues, and long talks and reminiscences of old days with Mr. Root. He was 76 years old in December 1916, but looks 10 years younger. We have known each other for nearly 40 years and the reader may imagine how much we might have to say.

Concerning the distance bees will go for honey, L. C. Root once had a very interesting experience. He had 100 colonies about 7 miles from a heavy basswood harvest. The bees found it, but he thought best to bring about a third of the colonies up to this timber. The result was that these bees harvested about 3 times as much as those who had to travel the 7 miles. 40 colonies, in 7 days, secured 4103 pounds of basswood honey, so although Mr. Root positively knows that bees can and do go 7 miles for honey in an emergency, he believes in locating them as near the crop as possible.

I could have enjoyed a week or more with my kind host but all things must come to an end and on Monday I left for New York City. The following day, Tuesday, I rode up the beautiful Hudson River, to Albany, on the steamer "Washington Irving".

We live on the Mississippi, the "father of waters", and are proud of the great stream, but its scenery is tame by the side of the Hudson's. This stream which has only 6 feet of fall in 150 miles, from New York to Albany, is in spots fully 3 miles wide and flows between beautiful and high hills. The Palisades, on the New Jersey shore, shortly after leaving the City, are abrupt cliffs. Nothing like them in the valley of the Mississippi.

Wintering Problem Analyzed

BY J. E. HAND.

IN the mind of some beekeepers the idea prevails that bees are cold blooded animals that remain semi-dormant in winter, consuming little food and warming up occasionally to eat and enjoy a flight when the weather permits. While winter is a season of rest from outdoor labor there are certain activities within the hive, necessary for the comfort and safety of the colony. As winter approaches, bees cluster closely in a spherical form between the combs and thereafter the temperature of the colony is governed and regulated by the outside air through the expansion and contraction of said cluster. Cold weather contracts the cluster, thus conserving the heat that always radiates from bees, causing a rising temperature within the cluster. The colder the weather the closer the contraction, the more perfect the conservation of heat and the higher the temperature within the cluster. So the highest cluster temperature is likely to occur in zero weather.

Warm weather expands the cluster, releases the heat, and the cluster temperature falls to meet the rising outside temperature. It is thus that the temperature of a broodless colony in winter varies in response to external fluctuations, but in the transition to summer conditions after the dispersion of the cluster no such variation exists, and a uniform temperature of 92 degrees is maintained during the breeding season.

With strong colonies in well protected hives the minimum outside temperature and the maximum cluster temperature are practically synchronous, but with weak colonies in unprotected hives there is a lag between the maxima and minima of inverse temperatures ranging between hours and days, according to the numerical strength of the colony and its power to generate and regulate heat, and if repeated by frequent cold changes it is likely to result in the death of the colony. We feel justified in assuming that this lag is directly responsible for a large percent of winter losses attributed to other causes.

Aside from the slight action required to expand and contract the cluster from day to day, the winter activity of bees consists in their constant circulation throughout the contracted cluster presumably in search of a comfortable position, and fanning with the wings presumably to areate the cluster with fresh currents of oxygen. Bees cannot remain long in one position either inside or outside of a contracted cluster, for those outside would chill and those inside would suffer with vitiated air; therefore, winter activity is the result of a contracted cluster.

Dr. Gates recognized these activities and recorded them in Bulletin No. 96. They are also recognized by Dr. Phillips, and recorded in Bulletin No. 93, as a process of external heat generation by muscular action, but the deductions drawn from experiments recorded in the bulletins mentioned warrant the conclusion that heat generation is an internal, incessant, involuntary process. The consensus of opinion is that cold weather causes increased activity and increased food consumption, and increased food consumption causes increased heat generation.

Expansion and contraction of the winter cluster is the basic principle of the heating problem, and the sum and substance of heat generation so far as relates to the activity of the bees. These activities have a devitalizing tendency, and the only remedy is to eliminate the contraction of the cluster by raising the temperature of the winter nest to a point that expands the cluster. This is accomplished by extreme contraction and internal insulation of the winter chamber, thus eliminating the cold zone and conserving the heat that always radiates from bees.

It cannot be accomplished with heavy packing on the outside of a non-contracted hive any more than one can keep warm in bed with the blankets spread on the roof; in either case the heat is lost by diffusion with the surrounding atmosphere, and the patient is chilled to the marrow by currents of cold air untempered by a heated chamber. A cumbersome winter case with heavy packing surrounding a thick-wall non-contracted hive will do for cold storage, but these are not the qualifications that should recommend a competent wintering hive when heat conservation is imperative. Extreme contraction is the most potent factor, except the food supply, and the wise beekeeper will supply ample stores of food and contract the winter chamber to conform to the compass of a winter cluster and surround the contracted chamber closely with porous packing, thus eliminating the cold zone and conserving the heat.

In this ideal condition bees will maintain a comfortable expanded cluster free from compulsive activities, will consume food moderately and come out in spring strong in numbers and vitality. The convertible principle solves the problem at a cost of 40 cents for extra equipment.

Birmingham, Ohio.

Taking Care of and Moving Winter-Sheds

BY G. C. GREINER.

WHEN I planned the use of winter-sheds with suitable packing as a means of better outdoor wintering, some 16 or 18 years ago, I was inclined to think that housing them during the summer would be necessary to materially prolong their service. To facilitate handling and to store them in as small a space as possible, they were made collapsible. All parts, sides, ends, tops and bottoms, could with little trouble be separated and re-adjusted as desired.

Housing them proved to be a heavy task, repeating itself every year. The advantages seemed out of proportion to the time and labor spent. All my hives, although constantly left outdoors, with proper care lasted a lifetime, and to judge from all appearance would last another, and why should my sheds not do the same? They were well made, special care always being taken to have their roofs in perfect condition, waterproof, and otherwise constructed with a view to resist the inclemencies of the weather. Taking these points into consideration I decided, some 12 or 14 years ago, to store them outdoors.

But this did not entirely eliminate the handling of the sheds. If we unpack our bees for the summer and place them on separate stands, which must be done to have free access to them, the sheds have to be moved back and forth from their storage ground to the summer stand of the bees in the fall, and back again in the spring. As I have no helper I always considered this the most tedious feature of the whole season. To overcome the difficulty I used a couple of 6 or 8 inch rollers, picking up the back one, when clear, and placing it in front to continue the transit. This mode of locomotion answered the purpose except that it was too slow. For years I had planned to construct a car or rig for this special purpose, and the only reason why my plans had not materialized before, was the lack of suitable wheels.

Last fall, just before putting my bees into winter quarters, I happened to run across a castaway two-wheel garden-drill, and the accompanying drawing, Fig. 1, is the result of my find. I have used the rig only one season, but I am so elated over its usefulness that I consider it one of my best time-saving tools. The drawing shows a shed on the move.

Figure 2 gives the frame without wheels; *a* is the platform made of 2x8-inch yellow pine, with a wooden block: *b*, on the underside of each end to hold a ½-inch steel rod for an axle; *c c* are the handles, 2x4 inch of the same material; *d* is the combination swing shelf that answers three distinct purposes; first, it supplies legs to the handles; second, it forms the connecting link and gives stability to the frame, and third, it carries the back part of the transported shed. It is made of a piece of medium heavy wagon-tire and swings on bolts in the handles. Almost

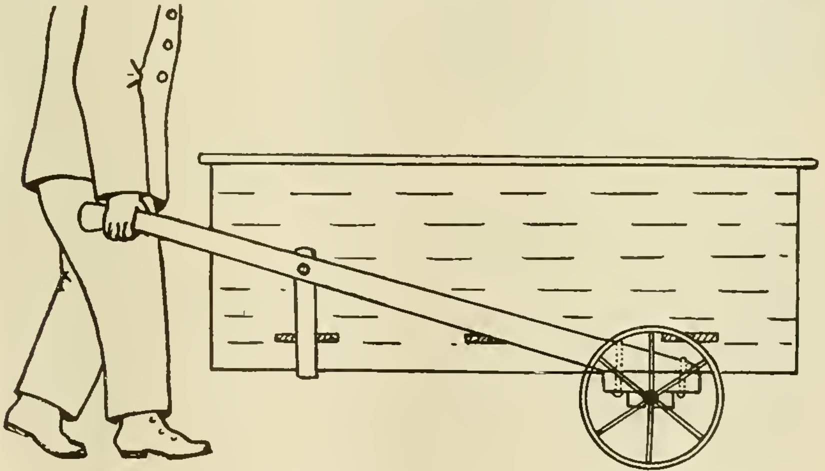


Fig. 1.

MANNER OF PLACING THE CART

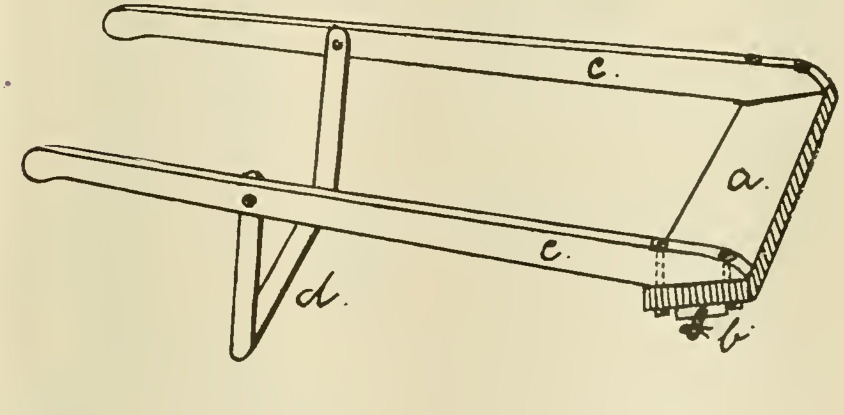


Fig 2

THE CART UNDER CONSTRUCTION

any rubbish-pile will furnish the material.

To load the shed is a simple affair. The car is run to the front end of the shed (See Fig. 3), with extended shelf lying on the roof, and when the car is pushed under the shed as far as the front-blocking, the shelf (with handles) drops automatically to the ground. It is then swung under the shed as in Fig. 1, and the load is ready to move.

From the foregoing the reader may infer that I favor the single-row-principle shed or case for winter protection; not because I consider them any better or safer for wintering than the quadruple or single colony case, but they are by far the most practical, time-saving style of the lot. In the course of the season miles of unnecessary steps are saved by their use. Our school-days' teachings, "A straight line is the shortest distance between two points," fits the case admirably. It is always one step to the next hive, while the quadruple case necessitates continual walking from one side to the other, and that right in front of the hive entrances. This has a strong tendency to irritate bees, and no doubt some of the cross-bee complaints, of which we hear occasionally, have their origin in this malpractice.

When using the wheelbarrow for the transportation of supers and other paraphernalia to and from the honey-house, this straight line principle is a great convenience.

La Salle, N. Y.

Feeds of Bees

BY W. K. MORRISON.

SEVERAL of your correspondents have referred to substitutes for pollen. Some advocate wheat or rye flour, not knowing of course that the albumen content is much too low to be a good substitute for pollen. Pea flour is far better in every way and probably lentil flour is better still. I think the Italians sometimes use lentil flour as a pollen substitute. Bean flour made from "broad beans" has also been used with good results. It is probable that a flour made from "garbanzas" or chick peas would be better than anything yet suggested, as the flavor is very fine. Those living along the Mexican border could try this. It looks as if cane sugar is gaining all along the line as a substitute for honey in feeding bees. Mr. Arthur C. Miller highly recommends a well-known brand of *cane* sugar which has been before the American public for many years. *It cannot be made from beets.* It has often been recommended in the bee journals before.

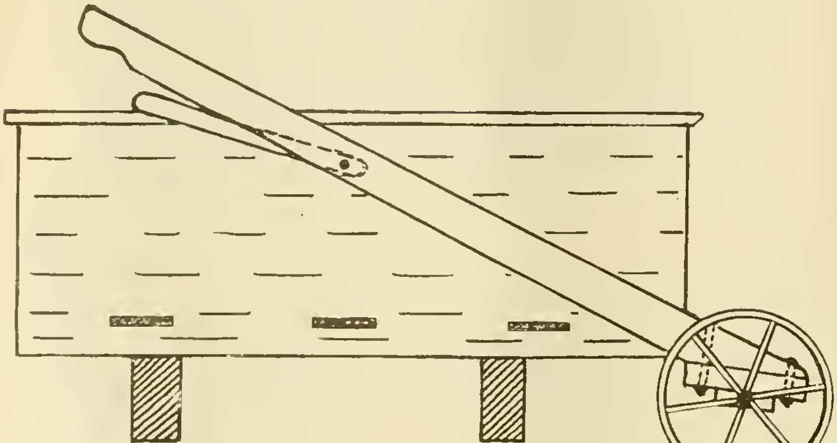


Fig. 3.

HAULING A HEAVY SHED WITH A HOME-MADE BARROW

The late Paul Mickwitz, of Finland, wrote an article praising *beet* sugar as a bee feed, and citing some experiments of his own in proofs of his claims. As a matter of fact he was using an invert sugar made from *cane* sugar which has been made quite extensively for some years by a firm in Hamburg, Germany. It is made in the form of a syrup and is certainly very fine. It is ahead of anything sold in this country for feeding bees. In fact, it is a fair substitute for honey, and when fed to bees baffles all but the very best chemists in Germany to detect the difference between it and real honey. It contains some other things besides invert sugar. It has given the beekeepers of Germany considerable trouble because some smart beekeepers fed it to increase their honey crop.

It is made in Hamburg because that city is a free port. Germany prohibits the sale of *cane* sugar to protect the beet sugar growers. It allows the manufacture of invert sugar from cane however under certain conditions. In the manufacture of condensed milk *cane* sugar alone can be used, so that, even in countries prohibiting cane sugar they have to allow an exception in this case.

Beet sugar has often been tried as a substitute feed for bees with poor results. Some people say cane sugar and beet sugar are alike. Uncle Sam has something to say about that. He will put you in jail if you sell beet sugar and say it is cane sugar. *Cane* sugar always sells for more money than *beet* sugar; pretty good proof that it is better.

In southern California both kinds are sold, but *cane* sugar is preferred for many purposes, notably fruit preservation. The leading canning factories all use cane sugar, and housekeepers of the discriminating kind all use it, even paying one-half a cent a pound extra for it. For feeding bees its value is even greater. The Western Sugar Refining Company of San Francisco put up a brand of cane sugar which they call "Fruit Sugar," and this corresponds very closely with the sugar Mr. Arthur C. Miller writes of.

Not all cane sugar is good for bees. Brown or Muscovado sugar is not good because it is burned in the process of making. It is only made now because it is used in some kinds of cookery and because it produces much "black strap" molasses. The "lumber jacks" in the northern woods like this molasses for two reasons, it is "heating" and it is laxative. The laxative effect is due to sulphur.

The best sugar of all for feeding bees is a yellow colored cane sugar known as "vacuum pan" sugar because it is cooked in a vacuum, thus preventing burning.

Very white sugar is not good because it has been bleached by the action of very powerful chemical reagents. Traces of these are left in the sugar, which the bees seem to feel. This may explain the failure of some to get good results in feeding.

Beet sugar is *always* so treated; moreover blueing is put into it for the same reason that women use it in washing clothes.

Dr. Wiley had his eagle eye on this phase of the sugar business, and that is one reason why he had to resign his position, as the sugar trust is very powerful politically. Yellow cane sugar (vacuum pan) can usually be purchased on the Atlantic Coast. The larger the crystals the finer it is in quality. It is very sweet.

Farther inland you can protect yourself by dealing with reliable firms, not the ones who say *beet* and *cane* sugar are alike. Montgomery Ward & Company sell only cane sugar. They will guarantee you that they sell no beet sugar, and many first-class grocery firms do the same. As a matter of fact all efforts to make a nice syrup from beets have failed.

Great Britain and her colonies are familiar with a fine cane syrup which is known as "Golden Syrup." The South produces excellent cane syrup by a simple process. Porto Rico used to furnish a large quantity of *Mallowe*, which was very good. Barbados produces its famous "sling," and all the cane sugar countries produce something nice in this line. These all make excellent bee feed, but are usually too expensive, as they contain water on which freight has been paid.

Of all the extraordinary things credited to the present great war in Europe is the astounding discovery that Europe now produces 8,000,000 tons (long tons at that) of *cane* sugar. Yes! *cane* sugar. This will cause Emperor William to rub his eyes in profound astonishment, if not in glee. This is the sample of the stuff we are to read nowadays. As a matter of fact the war will have the effect of increasing the production of cane sugar and decreasing beet sugar for some time to come.

It is too soon as yet to prophecy as to sugar prices. Part of the beet crop will be lost, but part of the demand will also be cut off. Cuba, Java, San Domingo and other tropical lands can readily increase their output of cane sugar, and the beet crop being largely a woman's crop will not decline so quickly as some suppose.

[We have many readers in Europe. We would like to ask them about their experience in this matter of cane sugar *vs.* beet sugar. We are under the impression that the difference in results is light.

As to flour and meal for artificial pollen, our bees have accepted all kinds, in times of shortage. Can our readers find any difference in results? —EDITOR.]

No. 3.—Seventy Years of Beekeeping

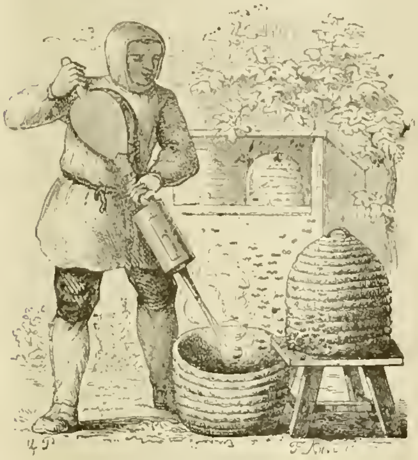
BY THE EDITOR.

THE third discovery which brought about a revolution in beekeeping was that of the extractor. It had long been realized by practical beekeepers that the excessive cost of comb to the bees made desirable a method by which the honey might be emptied out of the comb and the latter returned to the hive to be filled again.

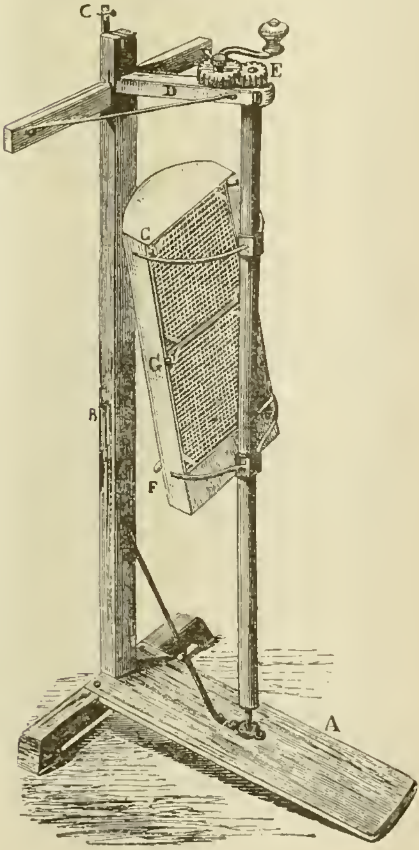
It was in 1865 that Major Hruschka, of Dolo, near Venice, in a part of Italy formerly under Austrian rule, made the accidental discovery of the possibility of throwing the honey out of the combs by centrifugal force. The manner in which this discovery was made is well known. He had given his little son a comb of unsealed honey in a dish to be carried home. The boy put the dish in a basket and playfully swung the basket around him, forcing a part of the honey out of the comb into the dish. The first extractor made contained only one comb at a time. But about the year 1867, the invention was sufficiently developed to become of general use in this country. The first description of this useful machine, given in the United States, was by Father Langstroth, under the name of "Honey-emptying machine," in the American Bee Journal, April, 1868, page 189. In November of the same year, Chas. Dadant suggested, in place of this clumsy appellation, the name "Melextractor," and it was not until March, 1870, that the name "honey extractor" began to be used. In that year the enthusiasm of the beekeepers got the better of their judgment, or else they had not yet learned that honey must be ripened before it is extracted, as from all sides came reports of wonderful yields. A. I. Root, under the *nom-de-plume* of "Novice," reported in the August number, page 32, having filled all the available jars, pans and wash boilers, and seriously contemplating 'scouring out the cistern and filling that, too, if the Italian bees were willing." Within a year or two, all the honey producers learned that unripe honey will not keep and that offering such a product on the market will endanger the sale of good ripe honey.

One of the first honey extractors to be manufactured for sale was the Peabody extractor, invented by J. L. Peabody, the can of which revolved in sockets at both top and bottom of the wooden frame, the baskets being immovable, on the same principle as the original invention, like the Dubini extractor shown in cut.

About that time, such queen-breeders as Langstroth, Alley, Gray, and others began to experiment on sending queens by mail. But the food used was honey soaked in a sponge and fastened in reach of the bees by a piece of wire-cloth. S. J. Parker, M. D., of Ithaca, N. Y., gave the description of this cage in the January, 1869, number of the American Bee Journal, and stated that he had received a queen in such a package safely, from Henry Alley, 450 miles from him.


HAMET SMOKER

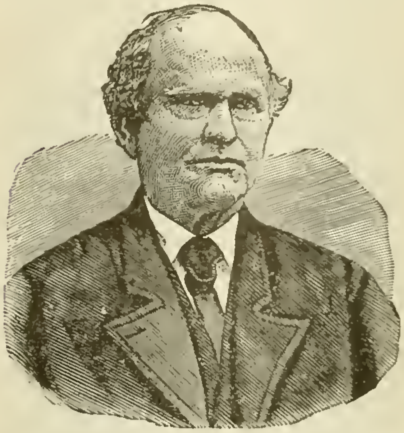
At this point it is well for us to make mention of a writer, beekeeper and manufacturer of bee supplies whose work is contemporary with the past 60 years, and who is still at the head of a thriving bee-business. We mean E. Kretchmer, now of Council Bluffs, Iowa. His first article on bees, as far as we can ascertain, appears in the American Bee Journal of February, 1870, but he was then already a man of extended experience. He had successfully sent a queen by mail to Stockton, Calif., as early as 1866.



THE FIRST HONEY EXTRACTOR

Mr. Kretchmer was born in Germany, not far from the home of Dzierzon, and in 1856, when his father made him a present of a colony of Italian bees, he went to Dzierzon for information on how to rear queens.

Coming to the United States a little later he served in the Civil War. He purchased Italian queens of the Parsons importation, and says that he was the first man to rear Italian bees west of the Mississippi. In a private letter to us, he writes:


THE PIONEER ADAM GRIMM

"A little incident which happened at the Iowa State Fair, in Burlington, shortly after the Civil War, brought me forward unexpectedly as a writer on bees. A man from the East was selling little vials of liquid as a so-called 'bee charm' at $1.00 per bottle and within his hearing I made the statement that I could handle bees better without the charm than with it. I was promptly challenged and a crowd gathered. In order to prove my assertion, I obtained permission from another exhibitor who had some bees, and by using a little smoke quickly subdued them in less time than it took the Professor to do so with the charm that he used on his lips. Newspaper reporters were present who exaggerated the occurrence in the write-ups, and I was shortly besieged by a number of parties who asked me to explain my management, and in the spring of 1865 I published a little pamphlet in the German language entitled, 'Winke Fur Bienen-Zuchter,' which was followed by my 'Beekeepers' Guide Book.' Soon the question arose what hive I used and where they could be obtained. This made it necessary for me to start in the manufacture of hives, and I have been at it ever since."

Mr. Kretchmer's first circular is dated 1865, and we have before us one of 1875, his 10th annual circular, in which he offers for sale hives, smokers, veils, extractors, etc.

If any of our readers wonder why we

give one man so much room in these reminiscences, we will answer that there is not another man living, to my knowledge, in the bee-business in any part of the world who can show as long, as steady and as active a record as Mr. Kretchmer, the next one to him being our old acquaintance, A. I. Root.

Beekeeping began to be considered as a possible profitable occupation when Adam Grimm, in the June, 1871, number of the American Bee Journal, made a report of $5,742.80 secured in honey, queens, beeswax, and increase of colonies during the previous year. He was then selling 240 colonies of bees for shipment to Utah for $2450.

In 1872, Samuel Wagner, the editor, died. His son continued the publication only a few months longer, and in January, 1873, Rev. W. F. Clarke assumed the management of the magazine. He retained it only about a year, when Thomas G. Newman became manager, and later proprietor and editor.

E. KRETCHMER

Meanwhile, beekeeping in Europe was progressing also. The American methods, described and praised in the French publications by Charles Dadant, very soon overcame the stubborn opposition of the obstinate Hamet, who at first called Mr. Dadant "an American Barnum." The flood of progress compelled him to accept the modern hives as well as the honey extractor, which he had first ridiculed as a "useless toy." This writer would not be worthy of mention had he not been a practical teacher in the management of straw-skeps and the publisher of an influential bee-magazine, still existing, although Hamet has been dead many years. Charles Dadant wielded a ready pen, and his criticisms of Hamet in the European periodicals of that day were appreciated on the Continent.

In Switzerland and Italy, beekeeping also made great strides. The Italian journal "L'Apicoltore," began its publication in 1868, with strong support of the new methods. For that reason beekeeping in Italy has long been practical among the educated classes.

In the year 1872, an open and bitter fight was made against the doctrine of parthenogenesis by an Italian curate, Parroco Giotto Ulivi. It lasted until 1880, and was based principally on ill-made experiments. From time to time, even in our day, adepts are found who sustain the opposition to a doctrine which is now a well-proven fact, and try to establish the theory that sex depends upon the food supplied to the hatching larva. Ulivi was irate and abusive. His doctrines have never been taken seriously by the students.

In England, the British Bee Journal began in 1873. Although some of our British cousins have been unwilling to acknowledge the beneficial influence of American ideas, many readily concede the practical help secured from us in results.

About 1873, Moses Quinby devised the "bellows smoker," on which he later made improvements. (See Quinby's "New Beekeeping" by his son-in-law, L. C. Root, page 90.) This implement was a great help to the easy handling of bees.

A few years later T. F. Bingham invented the "direct draft" smoker which has some very good points, but the principal part of it was a copy of the Quinby smoker. So the original credit must be given to Quinby. Up to his day the bee-smokers were clumsy affairs for the use of which both hands were needed. The Germans, however, already used a large pipe with tobacco, for smoking their bees. Up to this day, nothing is used but the pipe or a cigar in many parts of Germany and Switzerland.

The one-pound section now used so universally was the result of divers attempts at the production of honey in small frames. The first boxes used by Langstroth were square 5-pound glass boxes which allowed so little ventilation that the bees did not work in them readily in hot weather. Then, in the early seventies, patents were granted to several inventors of sectional boxes, the leader among them being Gen. Adair, of Kentucky, who was at that time the publisher of "The Annals of Bee Culture." His super box was composed of frames, the top and bottom bar of which overlapped on the end bars to form the box, held together by a wire, with glass at both ends.

In 1873, Kretchmer was granted a patent on a honey-box "consisting of little frames holding about a pound of honey which were clamped together with strips of tin folded at right angles,

THE LATE JOHN HARBISON, OF CALIFORNIA

with a sheet of glass on one side. Harbison, the largest honey-producer in the entire world, who landed the first bees in California in 1857, used a small honey section as early as 1869, but it was quite heavy. About 1877, Forncrook, of Wisconsin, patented a folding honey section, but as it was a copy of other folding boxes the patent proved worthless and the one-piece section came into general use.

Although it is a mistake to give fuel to our national self-esteem, which is already as great as that of any other nation, we cannot help taking note of the promptness with which America seized the discoveries made in the Old World and improved upon them. The honey extractor, for instance, invented abroad, was used largely in this country and very practical machines were made of different patterns, while even in the country where the idea of centrifugal extraction of honey was discovered, the honey extractor remained for years very primitive. The cut which we give of the original machine, is borrowed from Dubini's "L'Ape" (The Bee) under date of 1881.

The result has been that after we borrowed the European inventions and improved upon them, they in turn have borrowed our improvements and our practical methods and implements.

In 1872, Charles Dadant went to Italy to import queens on a large scale. But his trip was a failure as far as immediate returns were concerned. However, he learned much during the trip and in two years later succeeded, in connection with Fiorini of Monselice, in importing queens safely. Hundreds were imported each year for several years. They were still sent by express, with one comb of white honey and one dry comb in each little box about 3½x5 inches. About 50 to 75 field bees were put in the box with the queen and *no water given*. Water was found worse than useless except in hives rearing brood. Nowadays the greatest losses are probably caused by the bees being suffocated while in the mail sacks. The Fiorini packages were made of 22 boxes, in a pyramid shape, with cushion on the underside and air openings all around. Stifling the bees was out of the question.

Some of the veterans of the present day beekeeping, besides the ones already named, are to be first found during the years 1868 to 1876. In October, 1870, appeared the first article of our own Dr. C. C. Miller. It was on "Queen Introduction." Doolittle's first article was in the very next number, November, 1870, and as might be expected by his friends today, it was on the same subject. One of our modest eastern beekeepers, W. D. Wright, had an article in the January, 1871, number on "Two Queens in One Hive."

Men who have long disappeared were well-known writers then, Alley, Gen. Adair, Chas. Muth, Elisha Gallup and Prof. A. J. Cook. The last named writer should also be credited with the first teaching of beekeeping in an Agricultural College, that of Michigan, in 1871. He was also the original promoter of a Congress of American beekeepers, the first meeting of which was held in Indianapolis in December, 1870.

Combless Packages

BY A. G. WOODMAN.

OUR experience with the combless bee package has been varied. Some of the packages came through in excellent condition and gave very good results, while others were a complete failure. The first sixty 2-pound packages that we received were almost a complete loss, principally on account of the shipper not using cages large enough. The queens for these bees were also shipped separate from the package, and as the weather was cool, there was considerable loss.

The first ten 3-pound packages came through in excellent shape, hardly a bee being dead. They were placed in hives and each given a 5-pound pail of honey with a few small holes punctured in the top of the cover, acting as a France pepper-box feeder. They gave us excellent results, some of them producing as high as 150 pounds of surplus honey or the equivalent. By equivalent, I mean increase of new swarms, their energy being diverted from the production of honey to increase.

MR. WM CRAIG, OF LUCE, MICH., PRODUCED 2000 POUNDS OF EXTRACTED AND 600 POUNDS OF COMB FROM 30 COLONIES
20 of these colonies were built up from pound packages in the spring

We had a number of 3-pound packages that came in after this shipment that did not do as well. One of the great troubles was poor queens. The package after being in the hive for a week or so would be found queenless or the queen would not be laying as she should. The loss that we had from these causes would have made the venture as a whole unprofitable.

We consider, however, that this difficulty can be overcome. It lies entirely with the shipper in the South. If he will take due precaution in selecting his queens and putting the bees up for shipment, there is no reason why they should not arrive in the North in first-class condition and give excellent results under normal conditions.

There has also been some trouble on acount of the size of the shipping packages. A package that would be plenty large in cool weather would not be large enough should the weather turn warm. For this reason it will always be well to use extra large cages. We have had them come through with water and without and can see no difference.

Grand Rapids, Mich.

My Experience in Purchasing Bees in Pound Packages

BY F. L. BARBER.

I HAD heard considerable discussion on this subject, some favorable and some otherwise, so I decided to try the experiment for myself, and my experience has led me to believe that no professional beekeeper who may have good hives and equipment on hand can afford to allow them to stand idle during the season, although I realize that all who order bees in combless packages from the South may not have as good success, or that I might not have as good luck another time.

Some of the things that will contribute to the success or failure of a venture of this kind are first: time of arrival and a reliable man at the other end of the line. Next, it is necessary to secure good bees with good queens. I believe one should be careful about giving a large order to an entirely new man, unless he furnishes satisfactory reference and guarantees pure stock and safe arrival.

Early last spring I ordered from the South combless packages with untested queens at $2.50 per package. These were to be delivered between May 1 to 10; safe arrival guaranteed. May 10 arrived but no bees. At this season of the year time is precious to the beekeeper, but I received a letter from the dealer, saying he would ship them in a few days. As it turned out, it was well that they did not arrive at the time stated, for we had a snow storm May 10. They arrived the 20th, the weather was warm and fruit trees were just blooming. The cages arrived in good shape with but few dead bees. The cages containing the queens were fastened to the top of the packages, so the bees could cluster around the cages. Twenty of these I placed in hives containing frames of empty combs, a few of them containing a little honey. Some were hives in which the bees had died last winter.

As the weather was warm the bees went right to work on the fruit bloom, and I did not find is necessary to give any feed, only what little honey there was in the combs. As an experiment I placed the other five in hives containing only full sheets of foundation and gave no feed. In a day or two I examined and found all the queens laying but two, which were missing. I wrote to the dealer and he immediately sent me two queens to replace those that were lost.

This was a great satisfaction to me. The colonies built up fast, and on June 25 I gave comb-honey supers to the 20 that had been hived on empty combs. The clover flow came about this time. They went right to work in the supers, and on July 5 I found it necessary to add another super on all but one of these. One colony swarmed on July 4, and as I had clipped the queens, I found and caged her and placed the cage in a new hive containing full sheets of foundation, which, after removing the old hive, I placed on the same stand, and the bees ran in and took possession.

Fifteen colonies finished two supers each, and four of them finished three supers, and each super contained 28 sections. The five that were placed on full sheets of foundation made very little surplus honey, but built up well and took in plenty of honey for winter stores. So I have from the investment 26 colonies of bees in good condition for winter, and enough surplus honey to pay for the first cost of the 25 pound packages of bees. Figuring the 26 colonies at $5.00 each gives me $130 for my work besides the experience which is worth something.

Lowville, N. Y.

Some Ingenious Appliances in a Queen Yard

BY E. G. LE STOURGEON.

MR. B. M. CARAWAY, of Mathis, Tex., has an interesting system on queen-rearing and mating. The nucleus or mating-hive is one-half the size of a 5⅜-inch ideal super. The frames are made by cutting an ordinary shallow extracting frame in half and using two more end-bars to complete the two frames. One advantage of this size of hive and frame is the ease with which it is possible to have combs built in a regular hive and stores of honey, pollen and brood secured for the use of the nuclei of mating hives.

For this purpose a super is divided into two equal compartments by a transverse bar with a beespace at the bottom and low enough from the edge of the super at the top to provide a rest for the end-bars of the 20 half frames. Figure 2 shows a super thus equipped with 16 frames and 4 division-board feeders.

As shown in Fig. 3, they are more than feeders. The block used for a top-bar is of two-inch material plowed out like the hand grip on the ends of hives. Below this block, for the remaining few inches of the frame depth, a sheet of foundation is inserted and comb drawn out to augment the capacity and storage room of the nucleus. In times of dearth, or when stimulative feeding is advisable, feed can be daily poured into the groove at the top through a hole left in the inner cover of the hive for the purpose. The cells are reared in strong colonies, in removable wooden cell-cups.

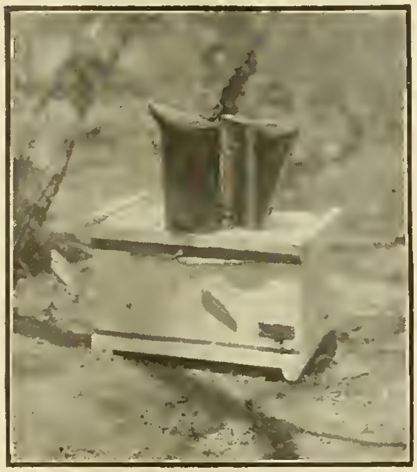


Fig. 1.—One of Caraway's Mating Hives

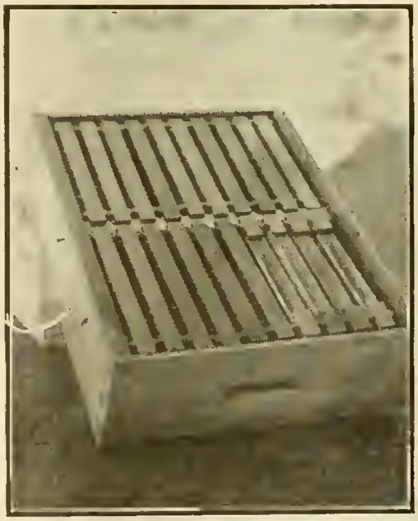


Fig. 2.—Super for Surplus Honey, Divided for Queen Rearing

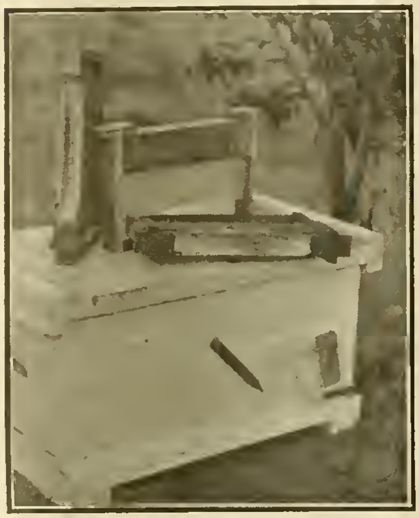


Fig. 3.—Feeder Frames
Note indicators on the nucleus entrance below

Two ingenious devices used by Mr. Caraway struck me as being of peculiar interest. The first of these is what he calls his "safety valve," and the other he styles "the incubator." They are both shown plainly in Figs. 1 and 3. The safety valve is the entrance device. The mating-hives have no entrances at the ends, but entrances are bored ¾-inch holes in opposite corners of the hive-body. A small block also having a ¾-inch hole in one end is nailed just above, so that it can be swung around. Thus the entrance can be wholly or partially closed or left open at will. A small square of queen-excluding zinc is nailed across the hole in the "door" or swinging block, and when this block is placed so that the hole in it engages the entrance of the hive it prevents the issuance of the queen. Thus, as soon as the young queen is mated the "safety valve" can be closed and the queen-breeder is sure that a swarm will not issue.

The indicator is as simple as the safety valve. It is an arrowhead—shaped piece of thin wood. Those I saw were made of one-half the side of an ordinary section, sharpened at one end. They are fastened with a small nail driven in tightly, but which permits the indicator to be swung around in a circle. The position of the sharp end or "hand" shows the condition of the hive. The arc of the circle is divided into sections similar to the points of a compass, each section indicating a step in the progress of queen-rearing within the nucleus.

This system saves unnecessary opening of the hives to determine their condition. Upon visiting the mating yards a glance will suffice to show what hives need attention and what is to be done with each of them. The finger of the indicator tells it all instantly. It can be moved about more quickly than a memorandum could be made, and as it is a permanent part of every mating hive it cannot be misplaced.

San Antonio, Tex.

Problems of Bee-Inspection

BY FRANK C. PELLETT.

I MUST confess that I have modified my views concerning bee-inspection each year of the five that I have served as State Inspector of Apiaries of Iowa. New difficulties presented themselves each season while some of the former ones became simplified. I have at last concluded that we have been working along wrong lines and that the plan now in operation in most States is not calculated to bring the best results, with the small appropriations available.

In the beginning, the appearance of foulbrood diseases was a matter of grave concern to the beekeeper. Little was known about either form and methods of control were not certainly understood. Practical men had found that by removing the bees to the new and clean hive and destroying the old combs, including brood and honey, the infection was frequently eradicated.

The beekeepers were poorly organized and were slow in bringing their needs to the public attention. As a result both European and American foulbrood spread in most of the northern States before a serious attempt at control was undertaken. All the laws for the control of bee-diseases with which I am familiar are similar in their general provisions. The sole idea seems to be to give a State officer authority to examine all the colonies in localities where disease is known to be present, and by the use of a rigid rule insist on the treatment or destruction of the diseased colonies. Had prompt and decisive action been taken when the trouble first appeared it might have been stamped out as foot and mouth disease seems to have been.

The first and greatest difficulty which an inspector meets is to cover thousands of square miles of territory in which are located thousands of colonies of bees with an appropriation not sufficient to cover 20 percent of the territory efficiently.

Next to the lack of funds with which to follow the directions laid down in the law, the next great problem is to get men who are familiar with bee-diseases and who have had sufficient experience in dealing with the public to enable them to do efficient work. In most States the work is paid for on a *per diem* basis. There is a rush of work for a few weeks during the honey harvest and nothing to do the rest of the year. When a man is competent to do the work of an inspector, he can earn several times as much for the same time spent in an apiary of his own, so it is necessary to be constantly educating young men who are willing to spend their vacations in this work for the experience gained.

One who has not been responsible for such work, under such conditions, can hardly realize the amount of irritation that is constantly arising because of mistakes of one kind or another. As soon as a man becomes trained to do the work, in an efficient and satisfactory manner he is sure to find a more attractive opening elsewhere.

Much tact is required to deal with men who know little about bees and care less. In the average locality where inspection is new, the inspector will find men who don't believe that bees are subject to such disease as foulbrood; men who defy his authority and dare him to come on the premises; men who regard the inspector as a grafter, and believe that the office was created by the politicians for the purpose of providing him with a job, and last and often rather infrequently, men who want to learn something about bees and who welcome the inspector with open arms. If all were like the last named, inspection would be a real joy, but to convince the others that it is to their interest to take advantage of the services of the inspector, and that they will not suffer because of his presence requires much diplomacy. A man must never be in a hurry, must never be arbitrary, yet must be firm. I have become fully convinced that the police powers for the purpose of enforcing the provision of the law should be in the hands of some other officer. The mere fact that the inspector is given such power adds greatly to his difficulties. Knowing that if disease is found the inspector is authorized to demand the destruction of the diseased colonies makes the uninformed dread his coming and place every possible obstacle in the way of having the bees examined.

Comparative Size of Mating and Regular Hives in the Apiary of B. M. Caraway

I might extend this paper to great length by outlining in detail specific instances of such problems as above enumerated, but the facts will be too apparent to require extended discussion. The real problem after all is to find a remedy that will meet the trying conditions. There seems to be little permanent value in the work of the inspectors aside from the education that comes to the individual beekeepers as a result of the personal contact. Even though sufficient appropriations of funds and sufficient trained men could be secured to stamp out foulbrood from any single State, the chances are that it would not remain free from the contagion for a single year. The fact that it is present in all the northern States, and most of the southern ones as well, makes it improbable that the disease can ever be permanently eradicated. It very frequently happens that an inspector will be congratulating himself upon the fact that by thorough work in a given locality he has cleaned up the disease, when lo! it suddenly appears again with a shipment of honey or bees from some outside location.

AN APIARY OF MATING HIVES—B. M. Caraway

Since all are agreed that the problem is one of education, why not make it an educational problem instead of a quarantine regulation? When an inspector goes into a locality and is required to examine all the bees there, entirely too much time and money is required, considering the limited resources available for the purpose. Apiary demonstrations, such as are now held in Ontario under Prof. Morley Pettit, would seem to be much more efficient. If the beekeepers of the surrounding country are invited to spend a day in an apiary where disease is present, much more can be accomplished toward the control of foulbrood. All who take sufficient interest to atttend the demonstration can be shown disease in its various stages, and also how to treat each colony as its condition demands. Thus, in one day 10 to 50 persons can be given actual instruction in recognizing and treating disease, instead of spending the same amount of time in examining the colonies in one large apiary. Under present conditions the inspector does not have time to give each man visited sufficient instruction to enable him to care for the diseased colonies properly, and it often happens that the inefficient owner will not understand directions correctly and will spread the disease instead of checking it.

In my annual report which has recently been filed with the governor, I recommended that the present office of State Inspector of bees be abolished altogether. In its place I have suggested that a man be employed on full time in the extension department of the College of Agriculture for the purpose of holding apiary demonstrations as above mentioned, during the summer months, and lecturing on marketing, production and other subjects of vital interest during the remainder of the year. It would not repeal the laws requiring proper attention to diseased colonies, and our proposed bill provides that the State apiarist can be called on petition of the beekeepers in any locality to examine bees which are supposed to be diseased. If he finds disease to be present he is required to give the owner written instructions for the proper treatment or destruction, which instructions the owner is required to comply with within the time specified. However, the enforcement of this law is left in the hands of others, and he is not handicapped by being required to see that his own instructions are followed.

According to this plan it is hoped that, by paying a salary for full time, a competent man can be secured for the work. By making his work purely educational in character, it is hoped that he will be able to reach many more people, and to avoid the prejudice which is apparent under the present law. I realize that this plan is not perfect, and that valid objections may be raised, but in a State like Iowa, where 50,000 square miles of territory must be covered, and where there are 30,000 beekeepers, big and little, I am convinced that far more can be accomplished with the *small funds which can be secured* for this work than by the present plan.

It is hardly within the province of the State to examine every individual colony of bees in localities where disease is present any more than it is to examine every pig where there is an outbreak of cholera or other animal disease. Quarantine methods are justified and necessary in dealing with some new malady which has not yet become generally spread, but it is a hopeless task to undertake to eradicate any wide-spread contagion by these methods. I am fully convinced that this plan will shortly be abandoned and educational methods substituted very generally.

Atlantic, Iowa.

[We have hesitated to insert the above article because of the probable objections of men placed in entirely different circumstances, who find advantage in the inspection of bees and feel the need of it. But Mr. Pellett has had experience and is entirely disinterested, two valuable qualities. We want the opinions of others who differ with him. But we trust they will first carefully read the statements made in the article. In most States the appropriation is insufficient. In Illinois, our inspector, Mr. Kildow has repeatedly said that the work of inspector should be mainly a work of education.

On the other hand, it is necessary that some method should be used to compel the treatment of bees where the apiary is neglected and becomes a danger to the public. Sooner or later we should be able to secure the thorough control of diseases. There is already a great decrease in the spread of foulbrood. Whatever we do, we must secure efficient men, men of experience for both the educational work and inspection. Beekeeping is thriving, in spite of diseases, but it is imperative that we should continue our efforts. The best way to secure good results is what we want to discuss.—EDITOR.]

Moving Bees by Wagon and Automobile

BY WESLEY FOSTER.

THE writer's first experience in moving bees overland was in 1903, when 125 colonies were loaded, together with extra comb-honey supers, supplies, etc., upon two flat-bottom hay-racks and a one-horse spring wagon and hauled 35 miles. The moving was done during our often delightful winter weather, during the day, warm enough for the bees to fly and cool enough morning and evening so the bees did not care to venture forth.

As we had no screens at that time and the weather was quite warm, the covers (and inner covers where we had them) were nailed to the hive-bodies. The bottom-boards were already nailed to the hives, so all that was needed to close the hives was soft cotton to close the entrance. The bees were loaded in the evening and early in the morning, and the start was made about 9:00 o'clock in the morning. As we had nothing in the way of springs on the hay-racks, all the cushioning was of straw, and while that helps, it is not sufficient unless one drives carefully and the combs are tough.

A FORD AUTO AND TRAILER HAVE A CAPACITY OF ABOUT ONE TON

During the day the sun shone very warm and some bees were continually coming out and flying around the loads. When we stopped for dinner and an hour's rest, it seemed as though a swarm was about each wagon—the bees, however, were gentle and did not offer to sting, and by the time we were ready to proceed, most of the bees had clustered upon the outside of the hives on the wagons.

In loading we loaded two tiers high and on top of the two tiers we piled the supers, extra hives, etc. Over the whole load we put large wagon sheets which darkened the hives considerably and helped in keeping the bees (that did get outside their hives) from flying around.

The drive of 35 miles took one and a half days, so we had the last half day for unloading and arranging the apiary.

I have moved bees without a single bee getting out of the hives, but this cannot always be depended upon, so one should always be ready for any emergency.

It does little damage for some bees to get out when moving by wagon, as most of them cluster on the hives, but when moving by auto, the motion is so rapid that what bees get away from the machine, do not get back.

Often on the rear of the wagon will be clustered near a half bushel of bees riding contentedly over rough roads and smooth, firm in the faith that they will be able soon to re-enter their own hive or one just as good.

When moving by auto, if the weather is cool, it is often unnecessary to fasten either cover or bottom-board, and I have closed the entrances with snow successfully for a haul of 5 to 15 miles.

Where 25 colonies to 100 are hauled by auto, the covers and bottoms should be nailed or stapled on tight.

Much of my moving has been done in spring or early summer, moving the bees in close to the foothills for the mountain bloom and out to the alfalfa fields for the July and August flow. When moving the bees in March and April, no screens are needed, unless the days are very warm, or a few colonies are extra strong.

When it comes to moving colonies to the alfalfa fields again, then is where care must be taken to give abundant ventilation and clustering space for the bees. I have never fastened the bottoms of the brood-frames and it is unnecessary when hauling by auto if the frames are self-spacing.

All colonies of full strength are provided for clustering above the brood, and the wire-screen is placed on top and nailed on with four 6-penny nails; the bottom, body, super and screen are then crated together strongly with an upright lath strip at each corner nailed on with shingle nails or cement coated nails. It is not necessary (unless the weather is extremely warm) to place strips of wood between one tier of hives and the next on top for the free circulation of air, as enough air gets through if the bees do not become overheated.

If bees become overheated and emit that tell-tale smothering smell, unload at once and release the overheated bees. If sufficient clustering space and air be given, this will be unnecessary, but often we mistake the strength of a colony.

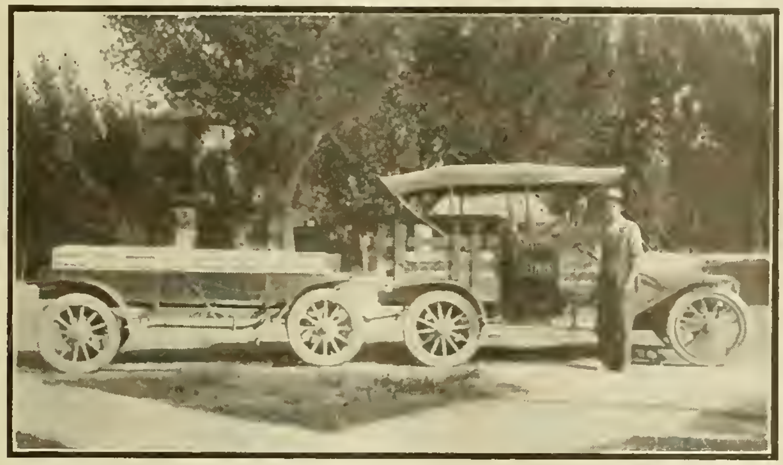
An auto is by far the most satisfactory for moving bees, as the bees ride so quietly that it seems many of the colonies do not know they are being moved.

My equipment now for moving bees,

and in fact doing all my bee work, is a Ford touring car with a two-wheeled trailer. The trailer has a capacity of about 1000 pounds, although I have had 1700 pounds in it. Twenty-five colonies may be loaded if they are not too heavy.

It is surprising what capacity the Ford has for pulling. I have had more than a ton in the trailer and in the rear of the car (to hold the wheels on the ground), and can go 20 miles an hour with it on good roads. The trailer tires are 28x3 inch pneumatic, and while the rim cut some when loaded heavily, it is cheaper to replace a few tires than make so many trips.

The trailer was built at home and in a local blacksmith shop, and cost about $40, including tires. All the wood used is oak except the floor, which is pine. The axle is a 4x6 inch oak timber, and we broke it once, too.



FOUR-WHEEL TRAILER OF T. F. EASLEY AT READ, COLO.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Beeswax for the Teeth

The following item is from a monthly magazine:

"A dentist recommends chewing beeswax while dressing in the morning as a dental exercise. It resists the teeth gently and its use will aid the teeth to become white and clean and strong and the gums firm."

It would be interesting to know just how the price of beeswax would advance if this practice should come into general use. Something depends upon whether beeswax be used each morning, or the same quid be used day after day after the fashion of gum-chewers. The question might arise whether dressing would be as expeditiously accomplished with a wax-chewing accompaniment. No doubt Horace Fletcher would advise that the extra chewing be done upon the food rather than upon beeswax.

Beekeeping for the Disabled

John Clark, of North McGregor, Iowa, is a paralytic and yet earns a living for his wife, little children and himself. Until a year ago when stricken with apoplexy he was a plasterer. He was skilled at the trade, had plenty of work and made good money. Meanwhile he had a hobby. It was bees. He can't remember when he wasn't interested in bees and would rather be fussing with them than doing anything else. After marriage his wife became interested, too.

They bought a small piece of land on the outskirts of town in a little valley among the Mississippi river hills where lots of sweet clover and much basswood grow. Reserving part of the land for the bee-hives, Mr. Clark set most of the rest of it to fruit. Apple, pear, plum and cherry trees, raspberry, blackerry, currant and gooseberry bushes were planted. The fruit blossoms would provide nectar for the bees and the bees would pollenize the blossoms as he figured it.

The fruit farm was nicely started, the bees were busy as bees in half a hundred stands and the husband and wife had the plans drawn for a pretty bungalow to be built at "Sunnyside Apiary", as they had named their little farm. Before the plans could take definite form Mr. Clark was stricken with apoplexy and the hard problem of obtaining money for food, clothing, doctor's bills and fuel drove away the roseate dream of the bungalow among the apple blossoms and the honey-bees.

It was then Mr. Clark gave thanks for his hobby, and the wife said: "If you will direct me from your bed I'll do the work and we'll see if we can't make our bees earn a living for the family." That was a year ago. November 15 this year they had sold 3600 pounds of extracted honey and had 500 pounds of comb honey stored in the cellar. This was the yield of 79 stands. The last few months Mr. Clark has been able to work a little in the apiary. He gives his wife the credit for their success because she did most of the work. She gives him the credit because he directed the job, which shows that as a married couple they are no less successful than as beekeepers.

Others are keeping bees in the country near by but with nothing like as good results. Mr. Clark attributes his success to good management and to their location near an abundance of sweet clover and basswood. Everybody knows the finest honey is "basswood honey," and nobody knows it as well as the bees themselves. When the basswood blooms the first two weeks in July, if there is no wind and the weather is fair the bees in Sunnyside Apiary will store 25 pounds per colony in ten days. The honey they make is so good that the proprietor has no trouble at all in marketing it. In fact, buyers this year come to the house for most all of the crop.

"Do you like the work?" the invalid was asked, and his face lighted up as he answered, "It's the most interesting business anybody can have. You never get tired of bees. There is always something new turning up and you can work with them a lifetime and still not know all about them." The wife answered, "I just love to work with them and now that I have learned how to take care of them do you know I have about decided beekeeping is a job really better suited to women than to men, for success in it depends upon looking after the little things, and I believe women naturally can do that better than men." Florence L.

From 79 colonies the yield was 3600 pounds of extracted honey and 500 pounds of comb. If we figure that 50 percent more extracted than comb can be obtained, then the 500 pounds of comb would equal 750 of extracted, which added to the 3600 would make 4350 pounds of extracted.

It would be interesting to know what price was obtained for the honey, but that is not given. Some who are especially favored get 20 or even 25 cents a pound for extracted honey of best quality. Few, however, can reach that. In this region the consumer does no grumbling at paying 70 cents for a 5-pound pail of white honey, and the price of extracted seems to be on the rise everywhere. At 70 cents a pail, after paying for the pail, 13½ cents net would be received per pound. That would make $587.25 for the crop, which will go quite a way toward keeping the wolf from the door, even in these high-cost-of-living times.

Most likely a hundred colonies can be managed just as well, which at the same rate, would yield more than $743. Indeed, it would be nothing strange if 150 colones might be supported and managed on the same ground, making the income $1115. For it would be noted that the yield is only 55 pounds per colony, and it would be nothing remarkable if further experience should materially increase the average. On the whole the outlook is quite promising for our afflicted friend and his faithful wife.

Not every one would agree that basswood honey is the best; but that may pass under the principle that no honey is so good as that made by "our bees."

Some may question whether the cellar is the best place to keep comb honey. That depends. In some places, as in Colorado, where the air is very dry, the cellar is all right. But in the average cellar in most places honey will attract moisture from the air, and it will not be so very long before the thinned honey will ooze out and weep down over the cappings. Yet in the dampest cellar in Iowa, honey may keep well if there is a furnace in the cellar and the honey is placed beside it.

Booklet About Various Kinds of Honey

In the Ladies' Home Journal appears conspicuously the following item about honey:

"American wives would do well, experts say, to use more honey, both in cooking and in the natural state. Your government has published a booklet telling all about the various kinds of honey, their value as food, and containing more than 50 recipes for using them. Free as long as the free supply lasts—after that 5 cents."

Considering the immense circulation of that most popular magazine, that item ought to give honey quite a boost. Here's a vote of thanks to the Ladies' Home Journal for the favor it has done beekeepers and—the public.

A Beekeeper Seven Years Without Being Stung

Miss Anna Piel, of Columbus, Ind., has the unique distinction of having run a profitable bee-business in this country for more than seven years without being stung, either figuratively or literally. At the recent convention of the Indiana Beekeepers' Association, Miss Piel rounded up practically the entire vote of the convention for women suffrage by a skillful analogy of life in a bee-hive and a suffrage camp. She said that drones were always antis, and that only the workers should be entitled to "honey." Woman suffragists she added, were all "workers," and far more entitled to the vote than a number of masculine "drones" that she knew of who spent most of their time "buzzing" lazily with their neighbors while the so-called "Queen" of their establishments took in washing to make both ends meet.—*National Enquirer.*

Teach the Value of Honey

Here are some things that should be known by each housekeeper, especially each mother:

It cannot be too widely known that honey is not only a delicious condiment, but a valuable article of food. It has value because of its flavor, which increases the flow of saliva and promotes digestion.

The average consumption of sugar in this country is something more than 80 pounds for every man, woman, and child. Some have less than the average, some very much more, and in that lies danger of sickness and death. For the cane sugar we have on our tables and use in cooking must be inverted by the digestive system into grape sugar before it can be assimilated, and too much of this inversion overburdens and brings disease. The sugar in honey is always inverted, ready to be taken directly into the blood.

Honey has special value because of the minerals it contains, which are entirely lacking in sugar. One of these is iron. It is quite generally known that a very important part of the blood is the iron it contains, albeit in very small quantity. Iron and other minerals are contained in honey in the very best form of assimilation, and we would be a sturdier race if a large part of the sugar consumed were replaced by that best of all sweets produced in the laboratory of the bee.

MISCELLANEOUS NEWS ITEMS

Farmers' Week at Amherst, Mass.—The novel feature of the year is the devotion of one session, namely, Tuesday afternoon, March 27, to the discussion of the value and uses of honey in the home and in cookery. Miss E. B. Shapleigh, of Columbia University, will give the cooking demonstrations. The writer will prepare for exhibition a collection of type honeys as well as of some brands. This is presumably the first effort to introduce honey for home consumption by means of Farmers' Week or through college extension work.

The program has not as yet been prepared. The sessions will open, however, March 27, at 9:00 a.m., and continue until Thursday noon, March 29. A number of prominent speakers are being engaged. The Thursday program, beginning at 9:00 o'clock, will include a joint meeting of the Hampshire, Hampden, Franklin Beekeepers' Association, Mr. O. M. Smith, of Florence, president, under whose auspices the program will be conducted.

The beekeepers' section, Section 8, is merely one section of an elaborate program for the week, during which about a thousand visitors are anticipated. The general program will cover all phases of agriculture. Application for the beekeepers' program can be made to BURTON N. GATES.

Amherst, Mass.

Indiana Beekeepers to Meet.—Under the auspices of the Indiana State Beekeepers' Association we are going to hold a one day beekeepers' meeting on March 9, at Washington, Ind. I believe this is the first meeting of the kind ever held in this State, and if it proves successful, I hope that several will be held next year.

The program will be as follows:

9:00 A M.—Opening Address by S. H. Burton, Washington.

9:30 A.M.—Discussion of American and European Foulbrood by D. W. Erbaugh, of Onward.

10:30 A.M.—Possibilities of Purchasing Pound Packages of Bees from the South, by S. H. Burton.

1:30 P.M.—Queen Rearing, by Jay Smith, of Vincennes.

2:00 P M.—Beekeeping Industry Recognized by Our State, by Mason J. Niblac, of Vincennes.

2:30 P.M.—The Work of Inspectors and Their Importance to Beekeepers, by F. N. Wallace, State Entomologist, Indianapolis.

3:00 P.M.—Question Box.

Northwestern Kansas Meeting.—The Northwestern Kansas Beekeepers' Association was formed at Manhattan, Kans., on Jan. 22, with a membership of 22. A constitution was adopted and the following officers were elected:

President, D. Von Riesen, of Marysville; Vice-president, John W. Lewis, of Manhattan; Secretary and Treasurer, Harry A. Huff, of Chapman, and two directors, Samuel Winsor, of Wakefield, and C. H. Failyer, of Manhattan.

A petition was prepared and sent to the Kansas legislature, asking them to vote for an appropriation of $5000 for the next two years for fighting foulbrood in the State. After the completion of the organization the following program was given:

Equipment, by J. H. Merrill; Honey Plants, by Prof. Roberts, of the Kansas State Agricultural College; A demonstration of the treatment of bee diseases, by J. H. Merrill; Bees as cross pollinators, by Geo. O. Greene, of K. S. A. C.; Spring Management, by Chas. Mize; Relation of Kansas State Agricultural College to Apiculture, by Prof. G. A. Dean, K. S. A. C.

An invitation was extended to the association to hold a field meet at Chapman some time in May, and was accepted. This makes the third auxiliary association in the State, and it is expected that there will be a fourth formed in a short time.

The Quebec Beekeepers.—The meeting of the Quebec Province Beekeepers' Association was held at Montreal Nov. 15 and 16, with a very full attendance.

The president, Dr. Lalonde, announced the successful passage of a law against adulteration of honey and beeswax. This was entered in the record.

Addresses were heard from the following: Beekeeping in School Gardens, by Charles Magnan; A Year with the Bees, by J. F. Prudhomme; Classifying, Packing and Shipping Honey, by Art Vaillancourt; Statistics on Bees, by F. N. Savoie, representing the Minister of Agriculture; Beekeeping in the District of Quebec, by J. Verret; Epilobium as a Honey Producer, by the president, Mr. Lalonde; Report on the Crops of Maniwaki and Mont Laurier, by Dr. A. O. Comiré, showing that large crops are harvested in that section; Cooperation in Beekeeping, by Aug. Trudel; Successful Beekeeping, by A. L. Beaudin; Honey as Food, by E. A. Fortin; Queen Rearing, by E. Barbeau; Sugar Feeding of Bees, by Mr. Péloquin, etc.

Lectures with lantern slides were given by Messrs. J. I. Beaulne, of the Ottawa Department of Agriculture, and Morley Pettit, of Guelph. Mr. Sladen, Dominion Apiarist, also lectured on the wintering of bees.

Some 35 prizes were given to exhibitors of honey, beeswax and implements.

After numerous discussions of interesting bee subjects, inspection, honey sales, etc., the meeting adjourned. The members declare themselves well pleased with the prospects and promise to return next season, in greatly increased numbers.

OSCAR COMIRE, *Sec.*
Abenakis Springs, Quebec.

Death of a Washington Beekeeper.—Through our correspondent Mr. A. E. Burdick, we are informed of the death of Mr. W. M. Williams, of White Swan. Mr. Williams, though not a very extensive beekeeper, was one of the "old ranks" in the West.

The family is unable to care for the bees and want to dispose of them. Parties interested should write to Mrs. J. H. Waters, White Swan, Wash.

The New Jersey State Beekeepers' Meeting.—The annual meeting of the New Jersey State Beekeepers' Association was held in the Entomology Building of the Agricultural Experiment Station at New Brunswick on Jan. 9–10, according to previous announcements. Several notable speakers were on the program, and several others appeared and added interest to the occasion. About 40 beekeepers from all parts were present, besides several ladies, though fewer than usual.

Heads of the departments of the Experiment Station addressed the meeting. Dr. Lippman, the director, emphasized the benefits of increased acreage, especially of alsike clover, being promoted by the department. Also the great value of lime in connection. Dr. Headlee, State Entomologist in charge of bee inspection, discussed the necessity of more extensive and thorough inspection if any results are to be attained. Inspector Carr gave a report of results in three counties which were very thoroughly combed during 1915–1916, showing the possibility of eradicating American foulbrood and greatly reducing European by extended painstaking work.

Mr. Frank C. Pellett, of Iowa, gave two very interesting talks; that upon beekeeping in the Mississippi Valley was treated under three heads, viz.: localities, systems, and markets. Mr. Pellett showed thorough familiarity with the details of each, and valuable conclusions were drawn applicable to other areas occupied by beekeepers. His illustrated talk about beekeepers he had met was most interesting.

Harold Hornor gave his method for securing a minimum crop, annual requeening after the honey flow, wintering on the summer stands in 2-story 8-frame hives, and some minor details. A lively discussion followed in which C. H. Root, E. R. Root, Frank C. Pellett and others participated.

E. G. Carr discussed the cause of failure in foulbrood treatment by the Alexander method, giving three conditions as indispensable to success. First, a strong colony, specifying six frames of brood and bees. Second, a period of positively no brood-rearing, and third, *good* Italian queens.

President Barclay's address on securing fancy prices was in an ironclad vein, and caused some merriment.

J. H. M. Cook gave personal recollections of early bee meetings, which showed the small beginnings of these occasions, now so valued. Mr. Cook is probably one of the best informed along these lines, having kept pace with the times.

Due mention must be made of the large share of interest contributed by E. R. Root, who "just dropped in." His talk on the value of a trade name was certainly an eye opener which might well be taken to heart by every commercial honey producer. Mr. Root in a talk subsequently urged the importance of a broad study of general market conditions by the commercial beekeepers. As a comprehensive statement, he advised extracted honey for the western man, and comb for the eastern, on account of the climatic conditions. This program would tend to adjust the production to the demands of the general market; neither too much fat nor too much lean.

At 7:30 in the morning of the second day a dozen of the more enthusiastic, under the guidance of Mr. Carr, took a trolley to visit the apiary of Dr. Headlee, at Highland Park, which is being used for experimental purposes in connection with the Agricultural Station. Various methods of outdoor winter protection are being tried, including the famous winter case of C. H. Root.

President Barclay having demonstrated his ability and fitness, and Secretary-treasurer E. G. Carr, the indispensable, were re-elected unanimously. 1st Vice-president Root and 2d Vice-president Cheney were also re-elected. F. C. Diener was chosen as 3d Vice-president to succeed Walter Garrabrant, who is too busy to attend.

While the attendance was less than usual, the meeting was far from being dull, being likened to a post graduate course. This suggested the idea of making the summer meetings more of a primary character, with talks and demonstrations for freshmen and undergraduates who can more conveniently attend those meetings. This plan may be further considered. C. D. C.

The New York Meeting.—During the holiday week a meeting of inspectors and instructors in apiculture was held in New York in connection with the meeting of the American Association of Economic Entomologists. Representatives of several State universities were present, and a most interesting session was held. Doctor E. F. Phillips' paper on "The Results of Apiary Inspection," was one of the most important of the entire program. It was based on the work of several States where inspection has been carried on for several years. He showed a marked decrease in bee-diseases where there is efficient inspection. Frank C. Pellett had a paper on the "Problems of Bee Inspection," in which he outlined the difficulties which the inspector must meet, and suggested some changes in policy whereby a less number of colonies will be examined and more demonstration work similar to the work of Prof. Pettit in Ontario be substituted. One of the principal difficulties of the present system lies in the limited funds which are seldom sufficient to do the work outlined. The demonstration plan will reach more people with the small funds available.

E. G. Carr, of New Jersey, talked on the requeening method for the treatment of European foulbrood as first advocated by Alexander, and by means of charts gave some interesting details of his experience with this disease.

Doctor Gates, of Massachusetts, outlined the essentials of a course in beekeeping as taught in his institution. The fact that a special session is given over to the consideration of the problems of the beekeeper at one of the most important scientific meetings of the year speaks well for the future of the industry.

An effort was made to secure uniform reports of the inspection work in all States where inspection is provided for. Since so many different methods of making reports are used there is little chance for comparison, which will enable one to tell whether the results in any particular State are up to the average. With uniform reports poor work will be apparent much sooner than under the present hit and miss system.

Doctor Burton N. Gates was elected President, and N. E. Shaw, of Ohio, Secretary of the section for the ensuing year. Since the tendency is to modify the plan of inspection in the future, we hope later to reproduce some of these papers.

Beekeepers' Convention in Massachusetts.—In connection with Farmers' Week at the Massachusetts Agricultural College, there will be a beekeepers' convention and short course in beekeeping March 27 to 29, inclusive.

Among other addresses and discussions will be those upon the following subjects: Care and manipulation of bees, Wintering bees, Removing from cellar, Swarming problems, Honey handling and keeping, Cooking with honey, Comb and extracted honey, Marketing, Queen-rearing, etc.

The Hampshire, Hampden and Franklin associations will meet on March 29. There will also be some exhibits of special interest to beekeepers.

PALATABILITY OF SWEET CLOVER.

Some years back there was no little objection to sweet clover on account of the difficulty of getting cattle to eat it. The following is copied from the Breeders' Gazette, and shows that the preference if any was for sweet clover over alfalfa:

> Many farmers say that cattle will not eat sweet clover. At the same time there are others whose animals relish it with a keen appetite. So much had

been said pro and con with reference to the palatability of sweet clover that it led to an experiment by the Iowa station. This experiment was conducted last summer to determine whether cattle used to feeding on sweet clover and alfalfa would show any preference for one forage over the other.

Six yearling heifers, all about the same size, were fed 80 pounds of sweet clover hay and 80 pounds of alfalfa hay in the same rack at the same time. Forty pounds of each hay were placed alternately in the rack so that the animals would have equal access to both. After the heifers had eaten until they would eat no more, the hays were taken out and reweighed. There were 34 pounds of sweet clover left and 48 pounds of alfalfa, thus showing that the animals had eaten 14 pounds more of the sweet clover than alfalfa, or 2.3 more pounds per head.

In grazing these same animals on alfalfa and sweet clover pasture, side by side, no preference was shown for alfalfa. The sweet clover was eaten as readily, although it was five or six feet tall and therefore very coarse. Yet some people insist that cattle will not eat sweet clover at all. Give them a chance. Sheep will even show a greater preference than cattle for sweet clover. Horses thrive well on it, even eating the forage when it is very coarse and woody.

W. E. BOWERS,
Virginia Polytechnic Institute.

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Wabash Valley Meeting.—The Wabash Valley beekeepers are going to hold a meeting at Mt. Carmel, Ill., March 10, to organize a beekeepers' association. Headquarters to be at the Merchants Hotel. All beekeepers are invited to attend.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

To Those Who Send Questions to Dr. Miller:

It seems necessary every now and then to mention some points to be kept in view by those who send questions to be answered. First, as to the time of sending. It occurs sometimes that a subscriber sends a question and asks that it be answered, say in the April number, when the April number is in print. A subscriber should understand that it takes a number of days from the time a question is mailed before it can appear in print. There's the time of your letter going through the mail. Then, if a number of questions come in the same mail, as often happens, it may be more than a day before I can mail the answers, and some exigency may arise which will occupy several days. Then there's the time of the journey from Marengo to Hamilton, after which the nimble fingers of the printer must put the answers in type, letter by letter, then the different forms must go through the press, one side being printed at a time, and then it's a big job to get all the journals dressed in their wrappers and addressed before Uncle Sam can be ready to carry them to you. The outcome of all this is that if you want an answer in the April number, your letter must get to me in time so I can mail the answer from Marengo not later than March 10. That makes it that you must mail your letter perhaps three days before that date, if you are not far from Marengo, and several days sooner if you are very far away. If you mail your letter to Hamilton, so it must be forwarded to me, then it must be sent still earlier. It is a little better, always, if you send your letter direct to me.

At the head of this department appears each month the statement: "He does NOT answer beekeeping questions by mail." Yet in spite of that I get letters saying something like this: "I know it is your rule to answer no questions by mail, but it will be too late to be of any use to me if the answer comes in print, so please answer by return mail." Looks like I might accommodate in such a case, doesn't it? But the trouble is that nearly every one would prefer an earlier answer by mail, so if I should answer all by mail then you would get no good of the answers I make to others, and I should give up answering altogether.

So don't think of asking answers by mail, and better send questions to Marengo rather than to Hamilton, and send them in good time, and I'll be not only willing but glad to answer all your questions in the Bee Journal to the best of my ability.

Bees Dying

What is the trouble with my bees? During the cold spells so many have died. Is it due to old bees or is it due to something else?
ALABAMA.

ANSWER.—Without any particulars I can only guess. It may be because an unusual number of bees are old, as you suggest, brood-rearing having ceased earlier than usual. It may be on account of unwholesome stores—possibly honeydew—and it is possible there may be some other trouble that I know nothing about.

Eight-Frame vs. Ten-Frame Hives

1. Will bees winter better outdoors in 8-frame hives than in 10-frame hives, provided they have plenty of stores and same amount of bees?

2. Will there be as much brood in a 2-story 8-frame hive as in a 2-story 10-frame; that is will the queen lay as much in the 2 stories as when she could stay in the lower story?

3. Will the bees swarm more in an 8 frame hive of two or more stories than in a 10-frame hive of two more stories, letting the queen go in the second story?

4. I expect to run for comb and extracted honey. Can I get as much extracted from 8-frame hives as from 10-frame hives, if I pile up the stories and let the queen go in the second story?
ILLINOIS.

ANSWERS.—1. I should say they would. At the same time it is only fair to say that in general a colony in an 8-frame hive would not have the same amount of bees and stores as one in a 10-frame hive.

2. Naturally one would think it a hindrance to a queen to go up and down from one story to another, but when I have tried it I could not see that it made any difference.

3. I don't know; but I think it will make no difference unless you have a queen so prolific that she needs more than 16 frames.

4. Yes, provided you have as many bees in one case as the other. But would you?

Colonies Dying—Distance of Hives

1. Early in the fall I had 12 colonies, but before I was aware of it I think three of them were robbed. I examined them and found there were no bees. A few days ago I went out to see how they were getting along and found two more hives with bees all dead sticking in the combs (or cells) in the lower part of the brood-frames and to the front end of the hives, and every frame was full of honey and brood and sealed very nicely.

They were in good patent hives and were protected by a pad of leaves on top of the hive and a pasteboard box a trifle larger than the hive and turned down over; also a good wind break of boards on the west. I took out the frames and examined them, and found they contained brood and what I took to be queen-cells; they projected considerably from the level of the surface like little mounds. Do you suppose they froze to death?

2. What can I do with those hives that have the dead bees and brood in them? If I clean out the dead bees and put another swarm in the same hive in the spring, will they clean it out and go right to work? If I undertake to cut out portions of it that will cause the honey to leak and will make a bad mess. I would like to save the brood-frames if possible and the time of refilling?

3. How close to each other would you suggest placing hives?

4. What can I do to prevent robbing?

5. I find some dead bees in front of each hive. Are they drones that have been killed off?
NEBRASKA.

ANSWERS.—1. I suspect those bees starved. Like enough the colony was weak, the cold was very severe, and the bees were gathered in a small cluster with no honey in immediate contact with them, and unable to reach the honey which was in abundance in the hive. Then they starved or froze, whichever you please to call it. They were likely queenless, and the "little mounds" drone-cells.

2. Brush off the dead bees, and when the weather gets warm and bees are flying daily, set a hiveful of the combs under a strong colony, forcing the bees to go down through these combs to get outdoors. They will be cleaned up ready for the first swarm that comes.

3. Set your hives in pairs, the two hives of each pair as close together as you can without having them touch each other. Between each pair allow a space of three feet, a little more if you have plenty of room, and a little less if you are crowded for room. If you have more bees than you want to put in one row, you can set another row back to back with the first row. If you have still more bees, you can set another row facing one of those rows with ten feet between the rows, more or less according as you have room.

4. The thing to prevent robbing is to keep colonies strong, and if you have a colony that is not yet strong let its entrance be small, and see that there are no cracks through which robbers can enter. Be careful not to have any pieces of comb with honey or dripping honey lying around. Don't allow queenless colonies.

5. They may be drones, but more likely workers, for workers are always dying in winter.

Buy Full Colonies or Pound Packages

1. What is the best way of uniting pound packages of bees without queens to weak colonies in the spring?

2. Which would you consider the better way for increase, full colonies at $7.00 or pound packages with queens at $3.25?

3. I had a colony of bees with an old queen that was clipped. About August they tried to supersede her. They built three or four cells, and after they were hatched the hive

was opened and the old queen was still in the hive. During the fall they tried to supersede her again, but with the same result. What was the cause of this?

NOVA SCOTIA.

ANSWERS.—1. The bees being hopelessly queenless, and further disheartened by their journey, they should not offer any antagonism to the queen or workers of the little colony to which they are given, and as they will be well gorged they should be kindly received. However, if you want to take extra precaution, you can unite by the newspaper plan of uniting colonies. Put a single sheet of newspaper over the top-bars of the weak colony, set over this a hive-body containing a few combs with some honey, dump in the new bees and cover up beetight. The bees will gnaw a hole in the paper, and gradually unite peaceably.

2. I think I would take the full colonies.

3. Are you sure they were trying to supersede her or trying to swarm? Anyway, was there anything unusual about it if they were trying to supersede her? Don't you know that in the natural course of events every laying queen is superseded by the bees? Always, always. As to the cause of the superseding, I suppose the bees think the queen is not as good as she ought to be, generally on account of her age, although I have known a poor queen to be superseded when less than a month old.

Wire Imbedder—Clover

1. Could you give me instructions for making the electric wire imbedder shown on page 342 of the American Bee Journal for October, 1916, Fig. 4?

2. I have a hive of bees whose honey drips on the bottom of the hive. I examined them but could not find the comb molested. It puzzles me. Here in January mice could not get in the hive.

3. Would alsike clover make good bee pasture if sown in a shaded orchard, and would it grow?

4. Would you advise planting sunflowers in convenient places for the bees or would it make honey dark?

5. What is the best time of the year for sowing sweet clover, and how long after sowing until it should bloom?

IOWA.

ANSWERS.—1. This appliance has since been patented. It sells for $1.00 without batteries. Any supply house should be able to supply you.

2. I wonder if it wasn't water instead of honey. It is not an uncommon thing for the moisture from the bees to condense on the walls of the hive and run out at the entrance. (If much of their honey is unsealed, it may have gathered humidity enough to more than fill the cells.—EDITOR.)

3. Yes, it would grow and yield, but the less shade the better.

4. From my experience in trying it on a small scale, I don't believe you would find it would amount to much unless you should plant several acres.

5. You can sow it as soon as the seed is ripe in the fall, or you can sow it in spring at the usual time of sowing other clovers in your locality. Seed sown in the fall of 1916 or the spring of 1917 will bring bloom in the summer of 1918.

Artificial Swarming—Getting a Good Start—Queen-Rearing

1. What is meant by artificial swarming?

2. What is meant by divided brood-chamber?

3. What is the best way to get a good start in the bee business?

4. Will you kindly tell me about rearing queens from a selected colony?

5. What is the season for swarming here in Minnesota?

6. What is the yield and profit from one good colony in one month?

MINNESOTA.

ANSWERS.—1. The term "artificial swarming" is loosely used for "artificial increase," and refers to any manner of increase other than by natural swarming.

3. A divided brood-chamber is one in which the brood is contained in more than one story, usually in only two. Generally each story is shallower than the depth of a Langstroth hive, although it is not impossible to have a divided brood-chamber with deeper hive-bodies.

3. The best way to make the right start is to get a good book on beekeeping, such as Dadant's-Langstroth. The book will suggest further steps.

4. A whole book might be written in reply to that question. In fact, an excellent book on queen-rearing has been written by that eminent authority, G. M. Doolittle. So you will see that the answer hardly belongs in this department. I may say briefly, however, that I rear queens from my best queen by allowing the colony to be rather weak, giving it an empty frame in which to build new comb, then when the frame is partly filled with comb I give it to a strong colony made queenless, and get fine cells. You will find full particulars of the plan in the book, "Fifty Years Among the Bees."

5. I think it usually begins somewhere about the first of June, with little swarming after the middle of July.

6. That varies greatly, for the best month in the year ranging from less than nothing up to $25 or more, according to pasturage or locality, kind of bees, season, or management.

Granulated Honey for Feed

I have several frames of granulated honey taken from a hive. I would like to know if it could be fed to bees without causing them any harm?

WASHINGTON.

ANSWER.—It will do the bees no harm, but they are likely to waste the granules. Uncap any that is sealed, spray the combs with water, preferably warm, and give to the bees. It may be well to repeat the spraying every two or three days until the combs are emptied.

Is Maple-Tree Juice Harmful?

In my locality, even in mid-winter, I frequently notice my bees busily engaged in gathering, on warm days, the juice of the maples which have been tapped by the woodpeckers. The next two or three days will probably be too cold for the trees to run or the bees to fly. Do you think under such conditions the juice will have any harmful effect upon them?

KENTUCKY.

ANSWER.—I don't believe it will do harm to amount to anything. All the less danger because as far south as you are the bees are never confined very long without a flight.

Caucasian vs. Carniolan—Bee-Tree Taken in Winter

1. Is a Caucasian or Carniolan queen just as good as the Italian in every respect, wintering good, honey gatherers, immune to bee-diseases and gentle? Would you recommend them just as good or better? What are their bad points?

2. I cut a bee-tree for logs Jan. 1, and in the top of it was a large swarm of Italian bees. I took them out, brought them home and put them in the cellar with my other bees. I gave them about eight pounds of honey and wired it in empty frames so I could hang it in the hive. My cellar runs about 35 to 50 degrees. I will have to open the hive to feed the bees this winter. Do you think I can get them through until spring, or will they die or have diarrhea in the spring or spring dwindling?

MICHIGAN.

ANSWERS.—1. Caucasians have been claimed as the best-natured bees in existence, but some have been reported quite vicious. Carniolans are so much like the blacks in appearance that it is hard to distinguish them. They have the reputation of being excessive swarmers. I don't know as to their powers in resisting disease, but have never heard either of the two kinds recommended as being better than Italians, if as good. Some prefer Caucasians to all others, and the same may be said of Carniolans, but in general Italians are preferred to either.

2. If they are disturbed no more than is necessary to furnish them sufficient food, they may pull through all right; but no one can be sure of the right answer before spring.

Bees Dying—When to Remove Packing?—Hives are Damp

1. I have three colonies in Massie hives, which I got last July and August. I fed them some in the fall and protected the top and sides with 6 inches of dry leaves. On examining them last week I found a great many dead bees on the floor of the hives, and using a wire raked out over a pint from one hive. Is this natural?

2. Bees were flying yesterday (Jan. 2); temperature only 50 degrees. How early in the spring should packing be removed?

3. The hives seem very damp inside. What is the remedy for this?

KANSAS.

ANSWERS.—1. There may be nothing wrong. In a strong colony it might be that by the end of December as many as a pint of bees had become old enough to die, and that the weather was such that they could not leave the hive to die.

2. They will be the better for the packing until it becomes warm enough so that they fly about every day.

3. Possibly the entrance is too small; possibly the colony is too weak.

Alfalfa Honey—Queenless Colony

1. What effect does alfalfa have on the honey? Is there a tobacco flavor to it?

On Dec. 6 I saw numerous drones going out and in a hive. What is the cause so late in the fall?

A READER.

ANSWERS.—1. Alfalfa gives to honey its own peculiar flavor, just as each honey-plant does. I never detected any tobacco flavor in alfalfa honey.

2. There may be nothing wrong possibly, but it is much to be feared that the colony is queenless.

A Beginner

1. How long does a queen live?
2. How long does a worker-bee live?
3. How long does a drone live?
4. How long does it take a queen to hatch?
5. A worker to hatch?
6. A drone to hatch?
7. How do the queens mate with drones?
8. Do workers lay eggs?
9. Do drones lay eggs?
10. How many times does the queen mate with the drone?
11. Please send me about 150 questions already answered.

ARKANSAS.

ANSWERS.—1. Occasionally less than a month, occasionally more than five years; generally two or three years.

2. A worker born just before the busy season may live about six weeks. Born in the fall, she may live six months.

3. A drone generally lives until the workers decide they can't afford to board him any longer. In a queenless colony he may live six months.

4. A queen emerges from her cell in 15 days or a little more from the time the egg was laid.

5. Twenty-one days.

6. Twenty-four days.

7. The queen meets the drone outside the hive, high up in the air.

8. Workers do not lay eggs except in a few cases when a colony becomes hopelessly queenless, and then laying workers appear, but their eggs produce only drones.

9. Drones, like roosters, lay no eggs.

10. As a rule the queen mates once for life.

11. I have been asked a good many different questions, and once a man accused me of manufacturing questions (he died), but you are the first man that ever asked me to furnish both questions and answers. I'd hardly like to undertake to make 150 questions that would just fit your case; but fortunately it happens that there is a possibility your desires may be met, since Editor Dadant or one of his sons expects soon after the time when this gets into print to have a book made containing 1000 questions with an answer to fit each question. Don't count too surely on it, however; he may go crazy before he gets through with it. Sometimes it's made me nearly crazy answering one at a time; I don't know how it would be to tackle a thousand at once.

Putting Up Hives—Maple Syrup as Feed

1. When setting up the dovetailed hives, do you nail the corners? If so, how far apart do you put the nails?
2. Will maple syrup kill bees if it is fed to them in the spring?
3. Is it necessary to paint hives different colors so that the bees will go back into the right one?
4. Does it do any harm to disturb bees in the spring? VERMONT.

ANSWERS.—1. It is well to put a nail in each finger of the corners.

2. No.

3. No.

4. Up to the time bees can fly daily, it is bad to disturb bees unless there be some strong reason for it, such as feeding to keep them from starving. After they fly daily a little disturbance does no harm, although it is better in general not to disturb them unnecessarily.

Increase—Dividing

1. What is the best method of hiving and caring for bees where only a small amount of honey or surplus is wanted and increase of swarms?
2. Do bees swarm the first year after hiving?
3. Can dividing be safely done; if so, how? ILLINOIS.

ANSWERS.—1. Perhaps as good a way as any, for one without much experience, is to allow the bees to swarm naturally, leaving the old hive always on the old stand and putting the swarms on new stands. In that way you may get several swarms from each old one, much depending on the season.

2. If you hive a swarm this year you are quite safe in counting that it will not swarm until next year. In rare cases, however, it does happen, and then the new swarm is called a virgin swarm.

3. Yes, dividing can be safely done by one with sufficient knowledge, but to do it successfully, without making some bad blunder, you should be familiar with the general principles of beekeeping, such as you will find in a good bee-book like Dadant-Langstroth. For a beekeeper to try to get along without a good bee-book is penny-wise and pound-foolish. To tell how to divide a colony hardly belongs in this department; but I may say that one way is to take from a colony all but one of its frames of brood with adhering bees, put them in a new hive on a new stand, leaving the queen on the old stand with the one frame of brood, and fill up each hive with frames filled with foundation.

Transferring—Swarm Prevention

1. I want to transfer my bees on metal-spaced Hoffman frames, Langstroth size. I do not want to use the combs of the old hive as they are too old and black. Would you advise me to use full sheets of foundation or not?
2. About what time of the year would you advise me to transfer my bees?
3. Would I need a queen or drone trap, and what other tools would I need?
4. Would those bees swarm in the spring after they are transferred, or would you advise me to let them swarm before I transfer them? They swarmed four times last spring, but seem to be pretty strong yet.
5. They claim that by cutting the queen-cells you can prevent swarming. But what if your queen should get killed or would die from old age, how could they get a queen?
6. What is the color of the larva of the bee-moth? Does it look like the larva of the honey-bee? ILLINOIS.

ANSWERS.—1. It is very much better to use full sheets of foundation. You can save three-fourths or more of the cost of the foundation by using narrow strips, but the bees will build too much drone-comb, and in the end you will lose a good deal more than you gain. Are you sure you are right about the combs being "too old and black?" If you leave it to the bees to decide, they will choose old, black comb in preference to new. It is hard to find comb too old and black so long as it is straight worker-comb.

2. During fruit-bloom is a good time, unless you let the bees swarm first.

3. No queen or drone trap is needed in transferring. Beside your smoker and hive-tool you need only a brush to brush the bees off the comb.

4. They will be likely to swarm at the usual swarming time, just as if you had not transferred them.

Yes, it may be full better to let them swarm first. Then you can hive the swarm in the new hive on the old stand, set the old hive beside it, and three weeks later brush the bees off the old combs into the new hive.

5. Destroying queen-cells may delay swarming, and in some cases prevent it, but generally the bees swarm sooner or later in spite of your killing cells. But if your queen should be killed, or die of old age, and you should persistently kill all queen-cells, then your colony would go up the spout.

6. The larva of the beemoth is white, or grayish white. No danger of your mistaking it for a bee-larva. The latter is found in the bottom of a cell, while the larva of the bee-moth is in a silken gallery that runs along the surface of the comb through many cells.

Space Between Hives—Shade—Entrance

1. Last fall I bought six colonies of bees, placed them on the south slope of a hill, on the east side of a strip of timber, where they get the shade about 2 p.m. Do they get shade enough?
2. I placed my hives in a row, leaving 6-inch spaces for packing. Will it be all right to leave them that way for summer?
3. Should the hives be perfectly level?
4. If painted, what color is best?
5. In using boughten hives, should the size of the bee-entrance be changed for summer and winter? SUBSCRIBER.

ANSWERS.—1. It isn't a matter of prime importance. Your bees will probably do well if in the shade all day long, and also if in the sun all day. I care for shade more for my own comfort when working at the hives than I do for the comfort of the bees.

2. So close together in a straight row, there is danger that bees, and especially young queens, will get into the wrong hives. If you don't want to make any greater change, you can improve matters much by moving every other hive. Move No. 2 close to No. 1—no harm if the hives touch—move No 4 next to No. 3, and No. 6 next to No 5. In actual practice this will be as good as making the hives three times as far apart standing singly.

3. Let them slant a little forward, but level from side to side.

4. White is as good as any other.

5. In summer it is better to have the entrance very much larger than is advisable for outdoor wintering.

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Pound packages of bees	**12**	**25**	**50**	**100**
1-lb pkg.............	$16.00	$33.00	$ 65.00	$127.00
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Safe arrival guaranteed within five days of Mathis, Tex.
If queens are wanted add price of queens wanted to above prices.

I have yet failed to find anything better than the strain of Three-banded Italians I have been breeding. They have made good in all parts of America and many foreign countries. Resistant to Isle of Wight disease in England, and European foulbrood and paralysis in America. The best honey gatherers I can find; gentle to handle, requiring but little smoke to control, and cap their honey white.

There are Goldens and Goldens, but I have at last secured the real **Golden Italians.** Prettiest bees I ever saw, and good honey-gatherers. Some colonies of my present strain stored as much as 250 pounds of surplus honey the past season. Gentle to handle.

Three-banded Italians and Goldens are bred in separate yards, so far distant as to make cross mating improbable. Every queen guaranteed. I will cheerfully replace any of my queens that prove to be mismated if returned to me.

Queens	**1**	**6**	**12**	**1**	**6**	**12**	**100**
Prices	March 15th to May 1st			May 1st to Nov. 15th			
Untested................	$1.00	$ 5.50	$10.00	$ .75	$4.00	$ 7.50	$60.00
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[Advertisements in this department will be inserted at 15 cents per line, with no dis counts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

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Rt. 20, Dundee N. Y.

WANTED—Position in an apiary with opportunity of buying or partnership.
E. Paillard, 165—3d St., San Francisco, Calif.

WANTED—A position with a beekeeper. I am 35 years old, have read the Bee Journal about 5 years, and have owned bees all my life. Will accept about $35 per month. Answer at once.
C. S Grape, Butler, Mo.

WANTED—Experienced queen-breeder and all-round bee-man, one that is a hustler and knows the business. Young unmarried man preferred. We furnish board and lodging. Write us your age, experience, etc., with lowest wages in first letter.
The Penn Co, Penn, Miss.

WANTED—To hear from a man who has had some experience with bees and wants experience in out-yard work. State age, weight, experience, wages and all particulars.
A L. Coggshall, Groton, N Y

THE 25C OFFER for the "Domestic Beekeeper" for the first half of 1917 is for *new* subscribers *only* as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it Address "The Domestic Beekeeper," Northstar, Michigan.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

WANTED

TRADE—Safety writing desk, $75 rifle for bees.
A. J. Graves, Ocheyedan, Iowa.

WANTED—Bees in lots of 25 to 250 colonies within 300 miles of Detroit. Correspondence with full particulars solicited.
A. W. Smith, Birmingham, Mich.

WANTED—No 15 extractor in good order.
Clarence F. Mara, Eastman, Wis.

BEES WANTED—State condition of hive and bees, also size of hives and number of colonies with price. Bee Ranch, Troy, S. Dak.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

MISCELLANEOUS

25 LADIES' COOTS, bird dogs, wild ducks for sale or exchange for bees
A. J. Graves, Ocheyedan, Iowa.

FOR SALE

FOR SALE—200 comb-honey supers, standard eight and ten frame size, painted, 50 and 40 cents. Write
Chester Keister,
Rt. 1, Clarno, Wis.

FOR SALE—22 Caliber Winchester in fine condition; magazine holds 25 cartridges, $4.00.
Leo Bentz, Rt. 4, Granton, Wis.

FOR SALE—Lewis 10-frame 4x5 supers, 100, used one season, cheap.
H. B. Allen, Cozad Nebr.

QUEENS ON APPROVAL—A select tested queen on approval Send address for description etc. Bees and supplies for sale.
A. M. Applegate, Reynoldsville, Pa.

ST REGIS everbearing rasoberry pedigree plants: 1 doz., 35c; 2 doz., 50c; 6 doz., $1.00, prepaid. Also strawberries, everbearing progressive pedigree, at raspberry prices.
L. H. Cline, Box 334, Marietta, Ohio.

PERFECTION Swarm Catcher; no ladder, no cutting of fruit trees. Bees take right to it; ladies can handle it. Directions with each order; shipping weight ½ pound. Price, $1.50.
C. S. Keyes, Rt. 3, Salem, Oreg.

FOR SALE—Fifty 10-fr. Langstroth dovetailed size, T supers with separators, T tin follower boards, super springs, at 55c each for lot f. o. b These supers have been used and are well nailed and painted one and two coats of paint.
C. J. Canniford,
Rt. 7, Rockford, Ill.

HONEY SIGNS made to order. Send for price and description.
S. Goodlander, Wabash, Ind.

FOR SALE—5x7 view camera lenz, 4 double plate holders; kit for any size plate, carrying case, 2 trays, 2 printing frames, lantern, and other things used in making pictures, $10—a bargain. Matt Smith, Preston, Iowa.

FOR SALE—Oak Ridge Apiary, consisting of 150 colonies of bees, house, barn, work shop, cement chicken house, with 5½ acres of land and bearing fruit. Situated 2½ miles from town with two, R. R., one a divison point. 20 miles from a city of 80,000 inhabitants. Address, Box A 12, R. F. D. 3,
Chillicothe, Ill.

FOR SALE—Well established retail honey business in one of the largest industrial centers of the world. Reason for selling is my apiaries are too far away to work to advantage, so I wish to move near the bees and devote all my time to them. A rare opportunity for a live man with a little capital. Established 1910.
John C. Bull,
811 So. Hohman St., Hammond, Indiana.
Phone 1023 J.

Alabama, N. Y., Jan. 22, 1917.

M. C. Berry & Co., Hayneville, Ala.—Book my order for 10 1-lb. packages of your bees with queens. The ten packages purchased of you last spring, although delayed in transit, and therefore taking five days to reach me, arrived in fine condition, not a cupful of dead bees in lot. They did well, more than paying for themselves the first season, and also went into winter quarters in fine condition. I have tried queens from several different places, and like yours best of all.
C. O. Board, Alabama, N. Y.

BEGINNING with the January number the name of the Review was changed to "The Domestic Beekeeper" and greatly enlarged, there now being 48 pages and cover; the pages being an inch larger each way. Listen, we want every reader of the American Bee Journal to see what a fine monthly we are now putting out, and we are going to offer a special bargain of six months' subscription to "The Domestic Beekeeper" for the first half of 1917 for the small sum of 25c. Just drop 25c worth of one or two cent stamps in a letter and write your name plainly and mail to "The Demestic Beekeeper," Northstar, Mich, and "The Domestic Beekeeper" will come to you regularly for six months.

SEND ONE DOLLAR FOR A TRIAL ORDER, AND WE WILL CREDIT THE AMOUNT ON ANY SUBSEQUENT ORDER OF FIVE DOLLARS OR MORE RECEIVED WITHIN 90 DAYS

Special Thirty-Day Offer

We send free samples on request, and are glad to do so. But we observe that selection from samples leads to copying and smothers the customer's individuality and limits the printer's field. Then, too, samples and postage add to the expense.

We Want to Print Something for YOU

Get the idea? Something that's YOURS, distinctive, individual, classy, modern, exclusive. It's the only way we can really show you what we can do with your order.

SEND A DOLLAR BILL

to us with your name, your post-office, and whether you produce or sell comb or extracted honey, bees, or supplies, and any other information or instructions, and we will send you in return 50 good quality envelopes and 50 sheets of good letter paper, ruled or unruled, all finely printed in two colors, all prepaid. Order today.

AMERICAN BEE JOURNAL, Hamilton, Ill.

Crop Reports and Market Conditions

In order to get this page started, we sent out from this office several hundred letters to subscribers in which we asked the following questions:

1. Condition of bees and amount of loss?
2. Honey plant conditions and prospects?
3. Are beekeepers going to increase in 1917?
4. Are many turning from comb to extracted honey?
5. How about supply of honey, comb and extracted and does demand exceed supply?

A summary of replies is given as follows:

Condition of Bees.

Although a little early except in the South to determine accurately, losses so far are as follows: In New England bees have wintered fine, better than usual, and in New York and other Central Atlantic states about normal. Throughout the Southeast losses are larger than average, ranging from 10 to 25% and condition of bees is below normal owing to backward weather and poor wintering with some starvation. Throughout the Central states there is little loss—less than average, although this has been a harder winter than usual. Idaho and Wyoming report that the loss will be above normal while in Montana and Colorado, about normal. Arizona and New Mexico report practically no loss as do Washington and Northern California. In Texas the loss is normal and in California, more than normal owing to a very peculiar and trying winter.

Condition of Plants.

In most parts it is too early to determine this. Heavy snows in the north half of the country have protected the clovers and given them abundant moisture. It has been too dry in Southern Illinois, Southern Iowa, Kansas, Missouri, and Tennessee and clover may suffer. In the Southeast heavy frosts have destroyed the early blooms and the condition at present is discouraging. The West has had abundant snows and prospects are above average. Texas reports it too dry and the horsemint flow may suffer; other plants normal. California is also very dry and reports indicate that the condition is from 60 to 90% of normal.

Increase.

A few large producers state that they will increase largely during 1917 if the season is favorable. In most instances, however, the increase will be normal except that beginners, influenced by large crops last year will make considerable increase.

Comb to Extract.

There is a general trend in favor of extracted honey. Two large producers in Michigan and Wisconsin are dropping comb honey to take up extracted. Many more large producers producing a mixed crop will devote more time to extracted in 1917. The bulk of large producers, however, who are equipped for either kind of honey will continue as before. The change from one to the other, however, should be noticeable.

The Honey Market.

In practically every instance, reports agree that extracted honey is "wiped up clean" and the demand far exceeds the supply. It is agreeable to note that in several instances, this was laid to the increase in local sales. Several reports are to the effect that there is a demand for carloads of honey with no supply available. One Government official a short time ago made the statement that there was market for 80 cars of honey going unsupplied in New York City alone. A recent letter from a prominent broker there states that the allies are buying in carloads to supply to their soldiers. He says that he could sell unlimited amounts of extracted honey now at any reasonable price. What little extracted honey there is left in the country is either in the hands of bottlers to supply their trade or in the hands of beekeepers for keeping the home trade supplied.

Comb honey, on the other hand, is easily obtained, though it is likely that conditions are easier than a year ago. In the east and central west, beekeepers are fairly well sold out, though many small lots are still offered. California seems to have disposed of most of its comb-honey as has most localities in the west, though many times at sacrifice prices. One locality in Montana reports 2300 cases of comb still unsold, and one in Colorado 3,000 cases which they wish to dispose of. The large markets are well supplied. In some instances there is still comb-honey of the 1915 crop which is partly granulated.

Texas and the balance of the South have sold out all stocks of bulk-comb and other honeys and the demand far exceeds the supply.

Depending on war and other conditions, there is every likelihood that extracted honey should range higher in price than in 1916 especially if every producer makes special effort to supply the local trade and to increase it. A million beekeepers each selling 100 pounds more locally would withdraw many carloads from the big markets.

Comb-honey cannot well get lower in price than at present and conditions should tend to improve.

Furnishing Reports.

Every reader is urged to send reports of conditions for our next number. The more reports there are, the more valuable should be the summary from them. See editorials for particulars.

Write on a postcard, number your answers, and address MARKET EDITOR, American Bee Journal, HAMILTON, ILLINOIS.

HONEY AND BEESWAX

CHICAGO, Feb. 19.—During the past month honey has sold quite well. Especially is this true of the extracted, and it would appear that there is not much more to be marketed.

Comb honey has moved off freely, and stocks are being reduced to a moderate quantity. Indications are that there will not be much carried over in this market.

Prices for white extracted honey are 10c per pound; amber, 8@9c per pound. Comb honey, 14c per pound for the best grades and the light ambers 12@13c per pound. Very little of the darker grades on the market, but sell readily at from 1@2 per pound less.

Beeswax is very firm, and bringing 33@35 per pound. R. A BURNETT & CO.

KANSAS CITY, MO., Feb. 15.—The honey market seems a little better. No. 1 comb honey is firm at $2.75, and No. 2 at around $2.50. The extracted honey market continues to advance and is firm at 7½@9½c a pound, according to the quality and kind of honey. There is plenty of comb honey on the market, but extracted is scarce. Beeswax is selling at 28@30c a pound, according to quality. C. C. CLEMONS PRODUCE COMPANY.

SAN ANTONIO, Feb. 15.—There is little or no honey offered in quantities for shipment from Texas at this time. Nearly all surplus in hands of producers has been marketed. Extracted, according to color and flavor is bringing 8@10c in wholesale markets. Beeswax is very firm. We are paying 27c cash and 30c exchange.

SOUTHWESTERN BEE CO.

DENVER, Colo., Feb. 18.—The demand for comb honey in carload lots is improving. We are quoting the following jobbing prices;

Comb honey, fancy white, $2.84; No. 1 white $2.70; No. 2, $2 57; per pound of 24 sections. Extracted, white, per pound, 9@9½c; light amber, 8½@9c per pound. we are always in the market for beeswax; for clean yellow wax we are paying 30c per pound in cash and 32c in trade, delivered here in Denver.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Magr.*

CHICAGO, Feb. 18.—Our market on honey is a little more active, and as a matter of fact we created a demand for it by reducing the price and advertising honey liberally. We have advertised the honey in the trade papers, and also have honey signs on both sides of our ten wagons, so as to push and create a demand for honey.

We are selling now on an average of 100 to 125 cases a day; there was a time that we would hardly sell 40 to 50 cases a day. Monday, Tuesday and Wednesday of this week we sold 700 cases. At the rate we are going we will be cleaned up in less than 60 days. Prices on double deck glass fronts, $3.00; flat crates glass fronts, $2.60 to $2.75; this is for the highest class of honey. We have some light amber and dark honey that is beginning to show candy that we are obliged to sell at reduced prices. Extracted honey is selling from 9@10c. Beeswax is firm at 30@32c. DANIEL J. COYNE.

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Box 10, Andalusia, Pa.

FOREHAND'S QUEENS

15 LBS. SURPLUS ☞ ***Which Colony is Yours, Mr. Beekeeper?*** ☞ **150 LBS. SURPLUS**

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of $3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All our yards are pure, so you take no risk in getting a hybrid. Four reasons why you should use our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. WHY? Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

	1	6	12		1	0	12
Untested	$ .75	$ 4 25	$ 8.00	Tested	$1.50	$ 8 75	$17.00
Select untested	1.00	4.75	9.00	Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

Paint Without Oil

Remarkable Discovery that Cuts Down the Cost of Paint Seventy-Five Percent

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

GOOD USED PIANOS AT CLEARING SALE PRICES SOLD UNDER WARRANTY AND SHIPPED ON APPROVAL AT OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; $75.
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; $85.
Pease Piano Co., upright, rosewood; $100.
Smith & Barnes, upright, mahogany; $115.
Mason & Hamlin, upright, ebonized, dull finish; $125.
Sheraton upright, mahogany, nearly new; $135.
Empire Piano Co., upright, mahogany, superior tone; $150.
Fischer upright, golden oak, fine condition; $175.
Fischer upright, mahogany, like new; $200.
Story & Clark, upright, elaborate style, mahogany; $225.
Knabe, upright, mahogany, perfect condition; $250.
Behr Bros., upright, mahogany, slightly used; $275.
Knabe, upright, mahogany, Colonial style; $300.
Steinway, upright, mahogany; $350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY CHICAGO, ILLINOIS

20 Packets Seeds—10c.

We want every reader to test **"HARRIS SEEDS THAT HUSTLE."** Send 10c. now—before you forget for this mammoth collection. We send you 20 separate packets finest varieties—one each—of **Beets, Carrot, Cabbage, Celery, Cucumber, Lettuce, Cress, Muskmelon, Watermelon, Onion, Parsley, Parsnip, Radish, Salsify, Spinach, Tomato, Mixed Poppies, Giant Cosmos, Double Jap Calendula** and **Children's Botanical Garden,** a curiosity collection of flower seeds. With this collection we send rebate check for 10c. and big catalog of world's finest seeds.

HARRIS BROS. SEED CO., 384 Main St., Mt. Pleasant, Mich.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world. They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

BOOK YOUR ORDERS NOW!

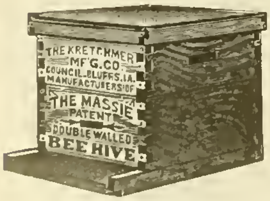
One-pound package, $1.40 each; 25 for $32.50; 100 for $125. Two-pound packages, $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3.25 each. No queens. Untested queens, Italian or Carniolan, $1.00 each, or $10 per dozen; 100 for $70. A big lot of fine tested queens. Cheap, write for prices. Prices on bees and queens in large lots quoted on application.

WM. ATCHLEY, Mathis, Texas

The Texas Bee and Honey Man

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate



THE MASSIE HIVE

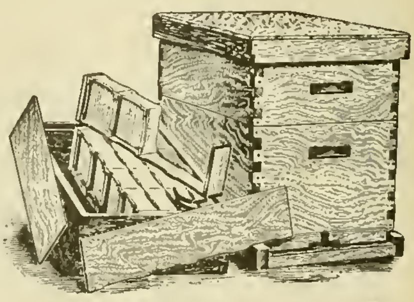
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request.

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

Prices of Combless Packages Without Queens*

Size	Price
Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3 lb. "	3.35

Three-Banded Italian Queens for April, May and June

	Price		Price
Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 10c	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind

We have just invented a new style cage for shipping bees, for which patent has been applied. This cage allows the queen to lay while on the trip, which gives the purchaser from three to seven days advantage of the old style cage. It is almost equal to a colony of bees. With every order for 100 pounds of bees we will give one of these packages with a tested queen free. We only have one dozen of these cages, and will not put them on the market till 1918, as our stock of cages was made up before we evolved the new cage.

Our Mr. A B Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders. the day they are due We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States and Canada. Place your orders early, as first comes first served Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

PURE MATING GUARANTEED—QUALITY FIRST

I am better equipped to take care of all orders, both LARGE AND SMALL, having located my queen and package business in Georgia. Our mail and express service is excellent, having 24 out-going trains DAILY—will make delivery same day order received.

Will be glad to hear from parties wanting LARGE QUANTITIES, as I am prepared to handle any size orders—will be glad to furnish sample of my combless package—will guarantee safe arrival in United States and Canada. Get my prices on 100-pound lots and over, my price will make you order from me.

Prices on Queens for March 15th to May 1st delivery.

	1	6	12
Untested	$1.50	$ 7 50	$12 00
Tested	2.00	10 50	18.00
Select Tested	3 00	15 00	24.00

Breeders, $5.00 and $10.00

Prices for bees by the pound without Queen begin April 15th.

	1	6	12
1-pound	$1 50	$ 8.00	$15.00
2-pound	2.50	14.00	27.00
3 pound	3.25	18.50	35.00

Prices of nuclei without Queens begin shipping April 15th.

	1	6	12
1-frame	$2.00	$10 50	$18.00
2-frame	2.50	12.00	22 00
3-frame	3.50	20.00	37.00
5-frame	5.00	23.00	44.00

J. E. MARCHANT BEE & HONEY COMPANY. Columbus, Georgia

TYPEWRITER SENSATION

$2 50/a A Month Buys Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.
H. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

CIRCULAR SAW MANDRELS AND EMERY WHEEL STANDS

Mandrels with boxes and pulley complete for bolting our frame. Three sizes. Circulars.

CHAS. A. HENRY, Eden, N. Y.

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 206 sections and gave two swarms. I am well pleased.

MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested............75 cts. each; $65.00 per 100 | Tested.......$1.25 each; $110.00 per 100
Select untested.....90 cts. " ; $75.00 " 100 | Select tested 1 50 " 125 00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

FOR FIFTY YEARS

QUALITY

Has been the one greatest aim in the manufacture of Root bee supplies. Have we made good? Have we reached our mark? Here is the test. Take a

ROOT
BEE-HIVE
BEE-SMOKER
HONEY-EXTRACTOR

Or any other specialty turned out in our factory, and after it has been

USED
ONE YEAR
FIVE YEARS
TEN YEARS

Compare it with one of any other make. Then see if the Root isn't best by test.

WHY?
ROOT QUALITY
plus
ROOT SERVICE

Give greatest satisfaction in the long run.

You can pay for your supplies for the coming season with beeswax. We are in the market for any quantity. Send us samples with prices of what you have to offer.

THE A. I. ROOT COMPANY
MEDINA, OHIO

MARSHFIELD GOODS

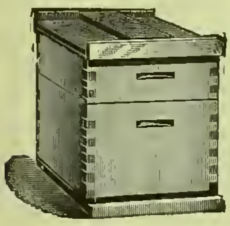
BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin



EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

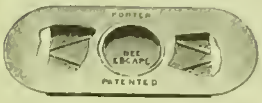
DON'T WAIT TILL SPRING

Before having your beeswax made into foundation or to buy supplies. Prices were never more unsettled. Better take advantage of present low prices and early order discounts, by ordering now.

Write for prices and discounts.

GUS DITTMER COMPANY
Augusta, Wisconsin

PORTER BEE ESCAPE SAVES HONEY TIME MONEY



For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

THREE-BANDED ITALIANS

Will be ready by April 1, to begin mailing untested queens of my exceptionally vigorous strain of Italian bees. They are gentle, prolific, and the best of honey gatherers. Give them a trial and I am sure you will be a regular customer hereafter. Will book orders now. Circular free. Safe arrival guaranteed in the United States and Canada. Untested, $1.00; 6, $5.00; 12, $9.00. Tested $1.25; 6, $6.50; 12, $12.50.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1.00 each; doz. $9.00. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

CYPRESS DEFIES DECAY

CYPRESS RESISTS ALL ROT INFLUENCES

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

IMPORTANT NOTICE to LUMBER USERS:

THE SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION HEREBY INFORMS YOU THAT ALL **CYPRESS** *NOW AND HEREAFTER SHIPPED BY MILLS WHICH ARE MEMBERS OF THE ASSOCIATION WILL BE*

IDENTIFIED BY THIS MARK

S C M A
No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

This registered trade-mark will be, henceforth,

YOUR INSURANCE POLICY OF QUALITY.

It will appear stamped (mechanically and ineradicably) on one end, or both ends, of EVERY board and timber of

CYPRESS "THE WOOD ETERNAL."

CYPRESS FLOORING, SIDING, MOULDING AND SHINGLES, which come in bundles, will bear the same mark on EVERY BUNDLE.

The legal right to apply this epoch-making symbol of strict RESPONSIBILITY IN LUMBER MAKING AND SELLING is, of course, restricted to those Cypress mills which, by their membership in the Southern Cypress Manufacturers' Association, attest their devotion to its Principles of SERVICE to the CONSUMER and their foresighted appreciation of its open and progressive educational methods.

Only mills cutting "Tide-water" Cypress (within about 200 miles of the coast) are eligible for membership. (Cypress grown elsewhere has less of the "Eternal" quality.)

Only mills which subscribe to the Association's standard of scrupulous care in methods of MANUFACTURE, INTEGRITY OF GRADING and ACCURACY OF COUNT can belong to the Association. These responsible "A-1" mills the Association now licenses to

CERTIFY THEIR CYPRESS **by applying the registered trade-mark with their identifying number inserted.**

S C M A
No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW THAT IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH. IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS."

S C M A
No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

Let our ALL-ROUND HELPS DEPARTMENT help YOU *MORE.* Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association

1251 HIBERNIA BANK BLDG., NEW ORLEANS, LA., or 1251 HEARD NATIONAL BANK BLDG., JACKSONVILLE, FLA.

INSIST ON TRADE-MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, *LET US KNOW.*

CYPRESS RESISTS ALL ROT INFLUENCES

CYPRESS DEFIES DECAY

CYPRESS "THE WOOD ETERNAL"

CYPRESS LASTS PRACTICALLY FOREVER

CYPRESS AVERTS REPAIR BILLS

AMERICAN BEE JOURNAL

APRIL, 1917

APR 5 19

Prune Orchards in Blossom in the Santa Clara Valley, California

ARCHDEKIN'S FINE ITALIAN QUEENS AND COMBLESS BEES

April, May, June queens warranted purely mated, $1.00 each; six for $5.00; per doz., $9.00. Bees per lb., $1.25. With untested queen, $2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

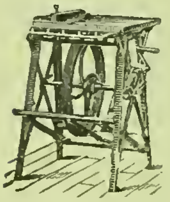
J. F. Archdekin Bordelonville, La.

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association
1424 Market Street, Denver, Colo.

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

BUY

THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for circular and Price list.

BEN G. DAVIS
Spring Hill, Tennessee

"ROUGH ON RATS" ends **RATS, MICE,** Bugs. Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. **Economy Sizes 25c. 50c.** Small 15c. Used the World Over. Used by U. S. Gov't. **Rough on Rats Never Fails.** *Refuse ALL Substitutes.*

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in May, June and July at the following prices, viz.:

Prices 1 and over	FROM PENN, MISS. 1	6	12	25 to 100	FROM TORONTO, ONTARIO. 1	6	12	25 to 100
Untested	$ .85	$4 50	$8 00	$ .65 each	$1 00	$4 80	$ 9 25	$ .75 each
Warranted	1.10	5.00	9.50	.75 "	1.35	5.80	10.75	.85 "
Tested	1.50	7 50	13.50	1.05 "	1.75	7.80	14 75	1.15 "
Breeders	3.00 to $10.00 each.				3.00 to $10.00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

	FROM PENN, MISS. 1 to 5 each	6 to 25 each	over each	FROM TORONTO, ONTARIO 1 to 5 each	6 to 25 each	50 over each
1-pound and Queen	$2 25	$2.00	$1.00	$3 00	$2.75	$2.65
2-pound and Queen	3.00	2 75	2.65	4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us.

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

Bee Supply Department

Orders shipped day received

Our warerooms are loaded with Lewis Beeware

Everything at factory prices

Send for catalog

Wax Rendering Department

We do perfect wax rendering. It will pay every Beekeeper to gather up all his old combs and cappings and ship to us. We charge 5c a pound for the wax we render and pay the highest cash or trade price.

THE FRED W. MUTH COMPANY

(*The firm the Busy Bees work for*)

204 Walnut Street, - - CINCINNATI OHIO

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subscription price postpaid.

Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year

Sample copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois

PATENTED

WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world, They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

BOOK YOUR ORDERS NOW!

One-pound package, $1.40 each; 25 for $32.50; 100 for $125. Two-pound packages, $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3.25 each. No queens. Untested queens, Italian or Carniolan, $1.00 each, or $10 per dozen; 100 for $70. A big lot of fine tested queens. Cheap, write for prices. Prices on bees and queens in large lots quoted on application.

WM. ATCHLEY, Mathis, Texas
The Texas Bee and Honey Man

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

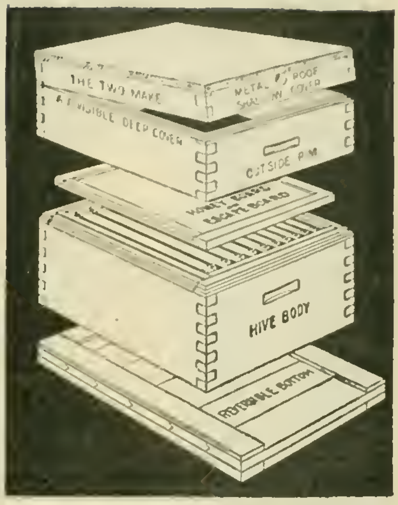
F. M. ALEXANDER
Atlantic, Iowa

CAUCASIANS

I am the Pioneer Breeder of pure Grey Caucasian bees. Queens, nuclei, and pound packages.

A. D. D. WOOD
Box 61, Lansing, Michigan

PROTECTION HIVES

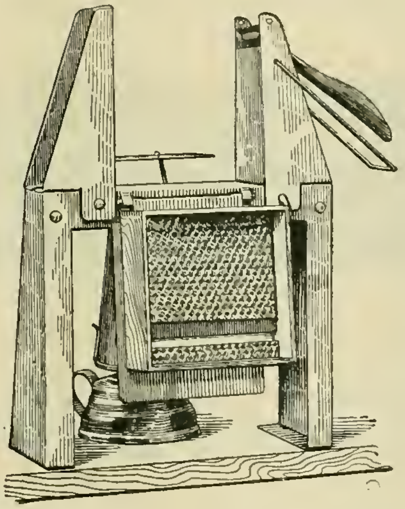


Price of five hives with outside rims, $13.75; without rims, $12.00 f. o. b. Grand Rapids, Mich. Delivered to any station in the U. S. A. east of the Mississippi and north of the Ohio Rivers with outside rims, $15.00.

Mr. Jay Cowing, of Jenison, Mich., has 235 of these hives in use, and 40 in single-wall hives; his 1916 increase. He has just purchased an other lot of Protection Hives, and says the approximate extra cost of $1.00 per hive over single-wall hives is the best kind of an investment for him. He is a beekeeper of more than 15 years' experience, and his 1916 crop was 580 cases of 32 sections, each fancy comb honey. His winter and spring losses of bees from one cause and another has never exceeded 10 per cent, even in the most severe winters, like 1908-09 and 1911-12. Mr Cowing bought some of the first Protection Hives offered on the market, and they have proven so satisfactory with him that he is still buying them.

They are double wall with air spaces or packing as you may prefer. The outer wall is made of ⅜ material and will last a life time. Send for a catalog and special circulars, showing large illustrations.

A. G. WOODMAN CO., Grand Rapids, Michigan



SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

H. W. Schultz, of Middleton, Mich., in writing us says: "Your Section Fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp $2.75. Shipping weight 5 lbs. Postage extra. Send for special circular, fully describing this machine.

A. G. WOODMAN CO.,

Grand Rapids, Michigan

TIN HONEY PACKAGES

A local wholesale house secured a carload of tin plate in September that was promised for April. Conditions are now even worse. When it is necessary to order tin plate a year or more in advance of the time it is wanted for use, advances in prices must be expected. The highest bidder will get the stock.

Freight at this time is very slow and uncertain. Prices are liable to advance. It would be a wise thing to secure your packages for the 1917 crop. Our three-year contract is giving us some advantage over general market quotations. Send us a list of your requirements. We can supply the following

60-pound cans, one and two in a case

Friction Top Tins

	2 lb. Cans,	2½ lb. Cans,	3 lb. Cans,	5 lb. Pails,	10 lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. Woodman Co., Grand Rapids, Mich.

BEE-SUPPLIES of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.

J. W. ROUSE, Mexico, Missouri

SELECT ITALIAN BEES

by the pound. Nuclei QUEENS. 1917 prices on request. Write,

J. B. HOLLOPETER, Rockton, Pa.

3-Band Italian QUEENS

PRODUCE WORKERS

That fill the supers quickly with honey nice and thick. They have won a world-wide reputation for honey gathering, hardiness, and gentleness. Untested, 75c; 6, $4.00, 12, $7.50. Tested, $1.50; 6, $8.00; 12, $15. I guarantee that all queens will reach you in good condition and give satisfaction.

S. D. CHEATHAM, Rt. 2, Greenville Ala.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

WE ANNOUNCE AN ADVANCE

Of 5c per pound on comb-foundation. This advance applies to all our 1917 price lists. On account of the high price of beeswax, we are compelled to withdraw our former quotations.

For beeswax, we will now pay 35c in cash or 37c in trade f. o. b. Hamilton, or Keokuk, Iowa. Prices of beeswax and foundation are, of course, subject to change without notice.

Save your beeswax and ship it to us to be worked into foundation for you. Send us your old combs. They are worth good money now, and we will get every ounce of wax out of them and pay you the above prices for your share of the wax.

DADANT & SONS,

HAMILTON, ILLINOIS.

The Proof of the Pudding Is In the Eating

The quality of Murry's queens and bees is shown in the increasing demand for them. Capacity of queen yards doubled last year and again this season. Advance orders up to March 5th nearly equal to total sales last season. Why? Because they get a square deal.

Three-banded Italians and Golden Italians. Orders filled by return mail. Safe arrival and satisfaction guarranteed. No disease. Health certificate with each shipment of bees or queens.

Queens	1	6	12	1	6	12	100
Prices	March 15th to May 1st			May 1st to Nov. 15th			
Untested	$1.00	$ 5.50	$10.00	$ .75	$4 00	$ 7.50	$60.00
Tested	1.25	6.50	12.00	1.00	5.50	10.00	
Select tested	2.00	10.00	18.00	1.50	8.00	15.00	
Breeders	5.00 to $10.00 each, any time.						

For nuclei and pound packages, see March issue of this Journal, or write for circular.

H. D. MURRY, MATHIS, TEXAS

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for April, May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10 00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1 frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above. Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex.

EASTERN BEEKEEPERS

This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars $5.00 a gross.

I. J. STRINGHAM

105 Park Place, N. Y.

APIARIES: Glen Cove, L. I.

ITALIAN QUEENS AND BEES

I am better able to supply the trade with my Three-band Italian Queens, Colonies and Nuclei than ever before. Send for circular and prices.

E. A. Leffingwell, Allen, Michigan

THE QUEEN OF ALL QUEENS

Is the Texas Queen, Italian Goldens that will please you in every way. 75 cents each, $8.00 per dozen. Circulars free.

GRANT ANDERSON

Rio Hondo, Texas

THE GUARANTEE THAT MADE "Falcon"
Bee Supplies Possible

The "Falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "Falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "Falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "Falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

HEADQUARTERS FOR BEE SUPPLIES
ROOT'S GOODS AT FACTORY PRICES
FOR
OHIO KENTUCKY TENNESSEE

We carry a large and complete stock of bee supplies, and are prepared to give you prompt service. We have just received several carloads of new fresh supplies. Send for our catalog.

C. H. W. WEBER & COMPANY, 2146 Central Ave., Cincinnati, Ohio

WATCH THIS SPACE
—— FOR ——
JOHN M. DAVIS
1917 Queen Prices
SPRING HILL, TENN.

Three-Banded and Golden Italians

The secret of success in beekeeping is to keep your colonies strong To do this you must have good healthy laying queens Untested, 75c; 6, $4 25; 12, $8.00. Select untested, $1.00; 6, $5.00; doz., $9.00. Tested, $1.50; 6, $8.00; doz., $15. Select tested, $2.00. Safe delivery guaranteed.

E. A. SIMMONS, GREENVILLE, ALA.

BEEKEEPERS' SUPPLIES

Send for new 1917 price list, now ready. Give us a chance to bid on your wants. We can save you money. We are in the market at all times for extracted honey in any quantity.

THE M. C. SILSBEE CO.,
Haskinville, New York
Post-office, Cohocton, Rt. 3, N. Y.

PERSONALITY
OF
Lewis Beeware

No Product Can Be Better Than the Sum Total of the Skill, Brains, Conscience of the Men Behind It—This Gives the Product Personality

What is the Personality of Lewis Beeware and the Company Behind It?

The G. B. Lewis Company has been in the business of manufacturing Bee Supplies for forty-three years. It has grown from a carpenter shop to a plant covering nearly six acres of ground, with an annual output of thirty million Sections and one hundred thousand Hives. During all these years in the face of advancing prices on material and labor, the scarcity of suitable lumber, the competition of cheaper and inferior goods it has had many opportunities and inducements to cheapen its product at the expense of quality—but it has ever steadfastly maintained one standard of quality and workmanship. LEWIS BEEWARE IS THE SAME TODAY, WAS THE SAME YESTERDAY, AND WILL BE THE SAME TOMORROW.

The business has been under the management and the lumber has been bought by one buyer for twenty years. He is still managing the business and buying the lumber. The head mechanic came into the factory when a boy. He has been supervising for forty years. The beehive superintendent has been making beehives for thirty-three years. The section boss has been watching Lewis Section machinery and output for thirty-two years.

This Is the Personality that Goes to Make Up Lewis Beeware —Does It Mean Anything to You?

If you believe that "a bee hive is a bee hive" and are not particular about quality or workmanship, then any make of bee supplies will suit you; BUT—if nothing short of the best will do you, then you want

LEWIS BEEWARE

Buy your metal goods and appliances where you like, But "if it's made of wood" insist on LEWIS BEEWARE—Every package of LEWIS Hives and every crate of LEWIS Sections bears the BEEWARE brand. LOOK FOR IT—INSIST ON IT.

G. B. Lewis Company

Sole Manufacturers

BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. USA
MAKES THE FINEST.

Watertown, Wisconsin

AMERICAN BEE JOURNAL

Vol. LVII.—No. 4 HAMILTON, ILL., APRIL, 1917, MONTHLY, $1.00 A YEAR

Honey Plant Regions of North America

—By John H. Lovell

AT the request of Mr. Frank C. Pellett, State Inspector of Apiaries of Iowa, the writer has contributed to his Annual Report an article, in which he has proposed the division of North America into 12 nectar or honey-plant regions. As this report is intended primarily for the beekeepers of Iowa, it is believed that the publication of a brief description of the proposed regions in a bee journal with a wider circulation is desirable. The regions are based on topography, climate, native vegetation and the geographical distribution of honey plants. The study of honey plants can be carried on to much better advantage by the recognitions of these areas than by States. The point of view in the latter case is often too narrow, and fails to offer an explanation of the occurrence of a species, when if the region is considered its distribution becomes perfectly clear. Merely as a matter of convenience for reference it is much easier to refer to a few natural divisions than to a great number of artificial State areas.

The 12 regions, as shown by the accompanying maps, are as follows:

1. Arctic Region.
2. Coniferous Forest Region.
3. St. Lawrence Basin Region.
4. Appalachian or Deciduous-leaved Forest Region.
5. Prairie Region or White Clover Belt.
6. Southern Region or Cotton Belt.
7. Florida Region.
8. Great Plains Region.
9. Arid or Cactus Region.
10. Rocky Mountain Highlands of Alfalfa Region.
11. California Region.
12. Tropical Region.

The maps are essentially the same as those given in the Report, except that in two or three cases the boundary lines have been changed slightly as the result of more definite information, *e. g.*, the southern end of the line dividing the Prairie Region from the Great Plains Region has been carried further westward at the suggestion of Mr. Pellett.

1. ARCTIC REGION.

The Arctic Region extends southward as far as the parallel of 60 degrees, passing south of the extreme southern point of Greenland, Cape Farewell. It is a treeless land, carpeted with mosses and lichens, with a permanently frozen subsoil; and is of no value to beekeepers. In localities there are dwarf alders, birches and willows, a few heath-like shrubs, such as blueberries and Labrador tea, while herbaceous plants are represented by a few hardy grasses, saxifrages, Compositæ, pinks, crucifers and the conspicuous Iceland poppy. For much of the year these barren tundras are swept unchecked by icy winds.

2. CONIFEROUS FOREST REGION.

From Labrador westward to the shores of the Pacific there extends a vast uniform coniferous forest, composed chiefly of white and black spruce, fir, juniper and pine, with which are associated alders, birches and poplars, while willows grow thickly on the banks of streams. In the southern portion small apiaries are maintained by the experiment stations in Manitoba, Saskatchewan, Alberta and British Columbia, but the region as a whole offers little of promise to bee-culture. The principal sources of honey are willows, maples, dandelion, white and alsike clover, fireweed, alfalfa and goldenrod.

3. ST. LAWRENCE BASIN REGION.

This region includes New Brunswick, New England, New York, Michigan, northern Wisconsin and southern Ontario and Quebec, or the territory lying around the Great Lakes and the St. Lawrence river. The conditions in the eastern section are much less favorable to beekeeping than in the western. The early honey flow is largely dependent on the clovers, while in the fall goldenrod is probably more valuable here than elsewhere in the country. Sumac and tobacco are of local importance in Connecticut. In New York there are extensive areas of buckwheat and fruit bloom. In southern Michigan, clover and basswood are the main sources of honey, in the northern part of the State fireweed and raspberry. Basswood was formerly much more valuable than at present.

4. APPALACHIAN OR DECIDUOUS-LEAVED FOREST REGION.

The eastern United States enjoys a uniform and abundant rainfall, which in the highlands of the Appalachian Region supports a magnificent deciduous-leaved forest unequalled elsewhere in North America. In the number of species and the size of the trees it is surpassed only by the forests of the tropics. Within an area of a square mile 75 species have been counted. As would be expected the principal honey plants are trees. as three species of basswood, sourwood, tulip tree, sumac, locust, Judas tree, Magnolia, maples, persimmon honey locust, holly, horse-chestnut, willows, besides a great variety of wild and domesticated fruit trees, shrubs and berry plants. The three most important honey plants are sourwood, tulip tree and clover. Sourwood, which extends from Pennsylvania to Georgia, is by many assigned the first position, being widely distributed and yielding nectar most freely. Many beautiful shrubs abound, as Azaleas, Rhododendrons and Kalmias.

5. THE PRAIRIE REGION OR WHITE CLOVER BELT.

The Prairie Region includes eastern Dakota, Minnesota, southern Wisconsin, Iowa, Illinois, Indiana, western Ohio, Missouri (not strictly a prairie State) and northern Kentucky. This is a treeless area, except along the water courses and where it merges into the Appalachian Region. The surface is partly level and partly rolling, and was formerly the bottom of a great inland sea. The soil is rich and deep, fine and compact, and supports a luxuriant growth of grasses. The soil and climate and the absence of extensive forests are most favorable to the growth of white clover, which throughout this region in favorable seasons yields an enormous surplus; while in the arid regions and highlands it becomes comparatively unimportant. Sweet clover and heartsease are also most valuable in these States, while in the lowlands or river bottoms there are splendid displays of hardy Compositæ, as Spanish-needles, sunflowers, asters, goldenrods, crownbeard, Rudbeckia and Grindelia.

6. SOUTHERN REGION OR COTTON BELT.

In this vast region (see maps) there grow annually millions of acres of cotton, offering a bee-pasturage which in extent and richness can be equalled by few other economic plants. The honey flow lasts from July until long after the first frosts. The secretion of nectar is influenced by soil, climate, rainfall, etc., but is most abundant in rich alluvial valleys, where 100 pounds per colony is obtained in good seasons. Southeastern Texas contains thousands of acres of fruit trees, cotton, horsemint, broomweed and basswood. On the lower coast rattan vine yields a dark honey unfit for table use. In Louisiana there are tupelo, horsemint, goldenrods and asters; in Alabama titi, gallberry; in Georgia tulip tree, tupelo, titi, saw palmetto, asters and goldenrods, while hundreds of acres of the coastal plain are covered by the dense thickets of gallberry.

7. FLORIDA REGION.

Florida might very properly be united with the Southern Region, but the great southern extension of the peninsula carrying it into the Tropical Region and its many miles of coast have produced so peculiar a honey flora that it deserves to be recognized as a separate region. The most important sources of honey are trees, tupelo, orange, palmetto and black mangrove yielding the best products. Black mangrove and manchineel are tropical trees growing on the southern coast, and the cabbage palmetto and citrus areas are also confined to the southern half of the State. Tupelo is abundant in the Appalachicola river. Other honey plants are wild pennyroyal, titi, partridge pea, and Andromeda. There are thousands of acres of savannas in Florida, tangled jungles of grasses and weeds, mostly Compositæ displaying great sheets of golden yellow flowers sufficient to keep thousands of colonies of bees busy.

8. GREAT PLAINS REGION.

While a part of this region is highly productive, much of it is semi-arid and covered with sage brush. There are few trees except along the streams and in fertile valleys, and there are great extremes of heat and cold. The northern portion is not well adapted to bee-culture, and in 1910 only 79 farms in Northern Dakota reported bees. Heartsease is the source of great quantities of honey in Nebraska, in which State 157 honey plants have been listed, but no attempt has been made to distinguish between those which are valuable and those which are of minor importance. Alfalfa is of little value except along the rivers. In Oklahoma the principal honey plants are sweet clover, sumac, heartsease, raspberry, locust and alfalfa. The Rocky Mountain honey plant is also much prized in sections of this region.

9. THE ARID OR CACTUS REGION.

Western Texas, northern Mexico, New Mexico, Arizona, lower Nevada and Lower California are largely a desert or semi-arid region with a very scanty rainfall. Northern Texas is a sandy plain destitute of trees and streams. With an annual rainfall of from three to five inches, extreme aridity prevails over much of Arizona, and in this State and the province of Chihuahua, in northern Mexico, there are over 150,000 square miles of desert land. A great variety of Cacti, an exclusively American genus, in every form and shape, ranging from the size of the finger to tall candelabra 30 feet high grow over or completely cover portions of this region. The prickly pear (*Opuntia Engelmanii*) yields a surplus of light yellow honey. Other plants are Yucca, Agave, mesquite and creosote bush. The mesquite, often the only tree found in these desert regions, extends from Trinity river, Tex., to the San Bernardino Mountains and northward to Colorado. In New Mexico, immense tracts of land are covered with Yucca, and many species of Agave occur in Mexico.

10. ROCKY MOUNTAIN HIGHLANDS OR ALFALFA REGION.

The larger part of these highlands is arid or semid-arid, and agriculture is universally dependent on irrigation. The flora is sparse and vast expanses are covered with sage brush. Throughout this region alfalfa is grown very extensively, and is easily of first importance as a honey plant. The factors controlling nectar secretion are not fully understood, but it is well established that in a semi-arid region calm hot weather following irrigation will ensure a good flow. In Colorado there is truly a lavish display of flowers and

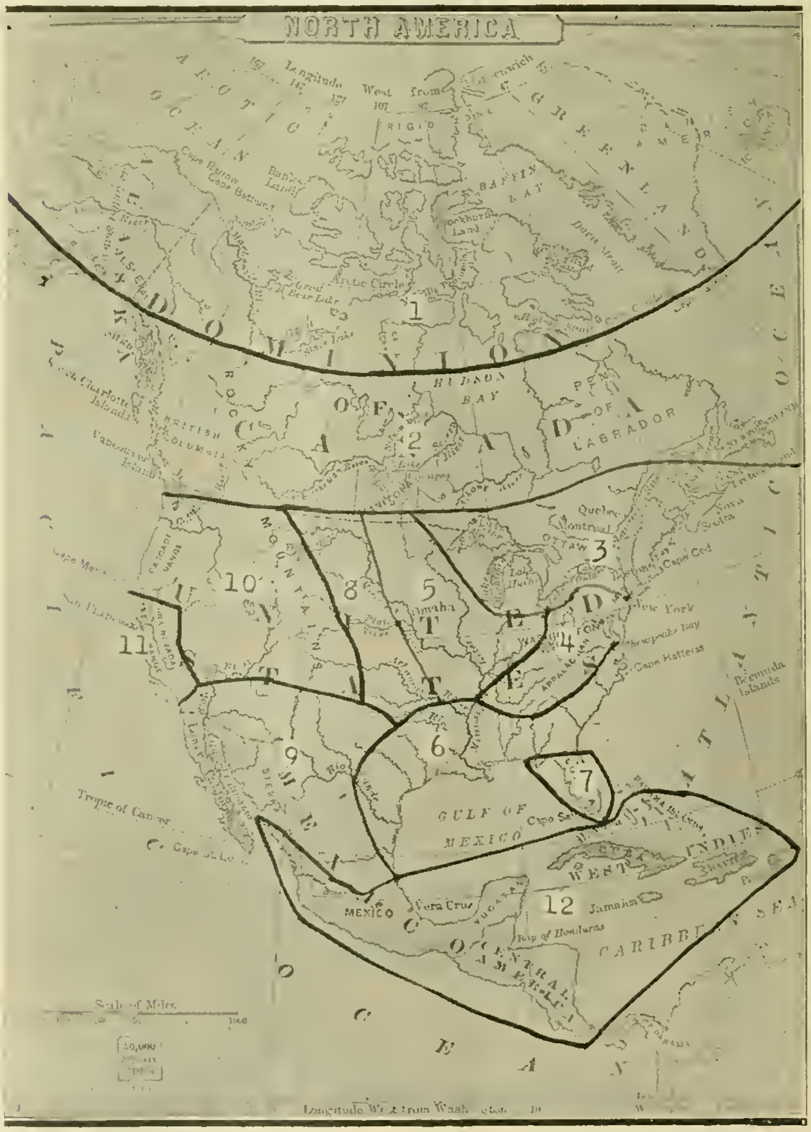


FIG. 1.—THE HONEY PLANT REGIONS OF NORTH AMERICA
1. Arctic Region. 2. Coniferous Forest Region. 3. St. Lawrence Basin Region. 4. Appalachian or Deciduous-leaved Forest Region. 5. Prairie Region or White Clover Belt. 6. Southern Region or Cotton Belt. 7. Florida Belt. 8. Great Plains Region. 9. Arid or Cactus Region. 10. Rocky Mountain Highlands or Alfalfa Region. 11. California Region. 12. Tropical Region

many of the Compositæ are doubtless helpful honey plants. In Washington and Oregon there is a greater rainfall, and the mountains are covered with a magnificent coniferous forest, and there is a great variety of shrubs and herbaceous plants, which are sources of honey. Along the coast of Oregon vine maple and a fireweed are valuable.

11. CALIFORNIA REGION.

No other State within an equal area contains so many species of plants as California. On the Coast Mountains are the famous redwoods. In the beautiful valley of California the meadows and foothills are carpeted with hundreds of beautiful flowers, lilies, buttercups, lupines, poppies, Godetias, and endless Compositæ. To the eastward of this valley the Sierra Nevada rises to the height of 15,000 feet, bearing on its slopes the finest coniferous forests in the world, composed of giant Sequoias, pines, firs and hemlocks. The rich honey flora of California supports more than 200,000 colonies of bees. There are some 50 species which yield a surplus in an average season, foremost among which are the sages and alfalfa. Over 40 of these are herbs and shrubs and the balance trees. Fifty more species, at least, are important to bee-culture, while many foreign plants have been introduced, like the Eucalyptus, which may prove very helpful in the future.

12. TROPICAL REGION.

For convenience southern Florida has been included in the Florida Region, but black mangrove, manchineel and mahogany are tropical trees, and so are the cultivated cocoanut palm, the mango, and custard apple. Among the honey plants of Cuba are the campanillas (*Ipomoea*), mango, citrus fruits, royal palm and coffee tree. In Porto Rico there are logwood, mangrove, mango, guava and guama. Guama (*Inga laurina*) is considered the best honey plant; it blooms several times a year and the bees are never able to gather all the nectar. The tropical forests of the mainland contain more than 100 kinds of trees, many of which are doubtless nectariferous. Logwood fringes all the lagoons and much of the seaboard of Yucatan. Only a glance can be given the tropical flora, which is evidently rich in nectariferous trees.

In the present paper only a brief outline of the honey plant or nectar regions of North America has been attempted. In many instances very little information is available in regard to the honey flora of extensive areas. There are scores of questions which can be answered at once in regard to honey plants by the comparison of the soils, climates and floras of these different regions. There is no difficulty in understanding why white clover reaches its maximum development in the Prairie Region, or why trees are the chief sources of nectar in the Appalachian Region, or why the tropical mangrove and manchineel are confined to southern Florida, or why mesquite, the cacti and other xerophytes are found only in arid areas. It is believed that the different regions are natural divisions, and that this arrangement will prove an incentive to the further study of the North American Honey Flora.

Waldoboro, Maine.

Inspection Work in Illinois

BY C. F. BENDER.

I HAVE read with interest Mr. Frank C. Pellett's article in the last issue of the American Bee Journal. Being one of the inspectors in this State, and having studied the same problems from every angle, I feel like saying a few words in reply.

With much of his article I entirely agree. It is true that our appropriations are too small, that there is some difficulty in getting good men for the work, that some bee owners will resist inspection or fail to carry out instructions. It is true that the pay is too little, and therefore that a first-class man cannot afford to give his whole time to the work. On the other hand, I have some fault to find with Mr. Pellett's conclusions, and with his proposed remedy. He suggests the holding of apiary demonstrations, where the beemen can be taught *en masse*. The only fault with that plan is that the very men who most need instruction will not attend.

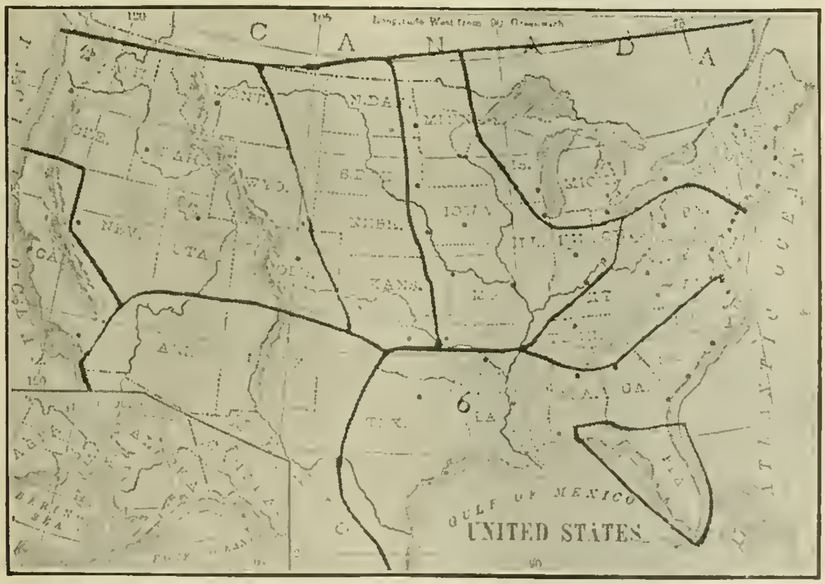


FIG. 2.—HONEY PLANT REGIONS OF THE UNITED STATES
St. Lawrence Basin Region. Appalachian or Deciduous-leaved Forest Region. Prairie Region or White Clover Belt. Southern Region or Cotton Belt. Florida Region. Great Plains Region. Arid or Cactus Region. Rocky Mountain Highlands or Alfalfa Region California Region.

We have no difficulty with the intelligent and progressive beekeepers who will attend conventions and field meetings. In fact, these are the very ones who insisted on this inspection work at the beginning, and who furnish the power that keeps it going. The men who harbor and spread disease are most often farmers, or men too old to work, who keep a few colonies, who know nothing about diseases of bees. When a colony dies they set out the combs for the other bees to clean up, or leave the hives open and exposed which is nearly as bad. Such people do not attend meetings to be instructed in bee-culture. They have kept bees from boyhood, and are sure that they know all about it.

No doubt Mr. Pellett, being a good public speaker, finds it more to his taste to address an audience, who come to him voluntarily. He can perhaps do more good in that way. Myself, not being a good public speaker, but having especial talents for private instruction, get much better results from visiting the delinquents, giving the instruction that each one needs, and showing him how to adapt it to his own circumstances. I have induced several troublesome parties to give up trying to keep bees, giving or selling the remains of their stock to some neighbor who was capable of treating them. In such cases I never appear as the officer of the law, but as the impartial friend of both parties. As Mr. Pellett says, much diplomacy is needed. Often a very stubborn man may be conquered by an apparent surrender; he will give generously to the very thing that he has refused on a show of force. It is necessary to judge the man.

There are a few people who wish to injure their neighbors, who will knowingly keep diseased bees for that very purpose. Such people are always cowards, and take their mean revenge only because they have not the courage for open warefare. In such cases the police power is necessary for the inspector. I have found only two such cases, and both gave in when I read over the law to them, showed them that resistance to the State was useless, and would merely cost them a fine, and possibly the destruction of their bees also. An inspector without power to enforce the law, it seems to me, would be much like a policeman who had no power to make arrest, who could only advise people to be quiet and keep the peace.

In regard to Mr. Pellett's plan of a straight salary for the inspector, my objection is unless another man is employed to inspect the inspector, the salary will be paid, whether the work is done or not. The office of bee inspector will inevitably drift into the class of political jobs, which pay a salary, but require no work, known from of old as sinecures.

Newman, Ill.

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Dr C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

The Goldenrod as a Honey Producer

We have often made the remark that the goldenrod yields no honey in this part of Illinois. Many people of other regions have said the same thing. We thought it was a matter of climate, but it is so indirectly only. It is a matter of variety. At the Toronto meeting, a large number of varieties of goldenrod were shown, and I recognized our variety *Solidago canadensis.* The report was made that this variety does not yield honey in Ontario either.

I thought it might be well to give a list of the different varieties of this plant. But when I referred to the last edition of "Gray's Botany" I found in it the description of 57 different *Solidagos.* It makes me wonder whether I have really recognized our local as *Canadensis.*

Wide Spacing of Frames

The reader will remember that in our December number the Editor called attention to remarks made by Allan Latham, of Connecticut, on the spacing of frames 1⅜ inches compared to the 1½ spacing used by a few apiarists.

Concerning this question of frame spacing, P. C. Chadwick has the following to say in Gleanings, page 125:

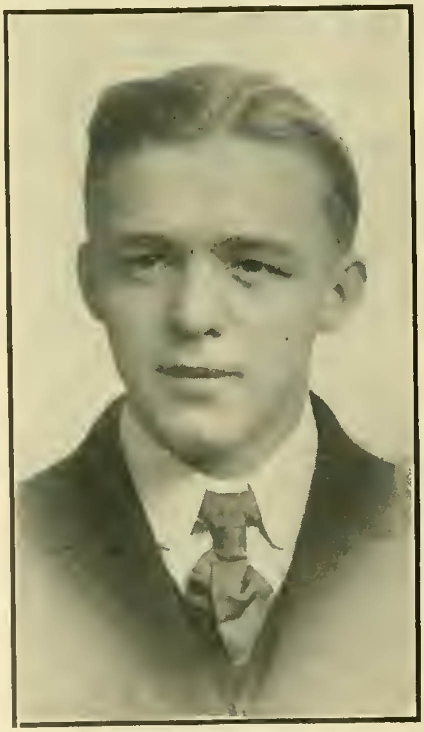
"If short of combs in the extracting season, go to the brood-chamber and remove a frame from each 10-frame colony. By the time the brood hatches from them they would be of little value as brood-combs unless the flow were exceptionally long. Moreover, 9 frames in a 10-frame body will often produce more brood than 10 frames; for unless they are perfectly straight and evenly spaced there is often a crowded comb that will not be used for brood anyway. Self-spacing frames are an exception; but the majority of frames in this State are not self-spacing. When the flow is on, combs are a great asset and add materially to the honey crop if they are needed badly."

A 10-frame hive the combs of which are spaced 1⅜ inches would be 13¾ inches wide inside. Using only 9 frames would give each frame 1½ inches of space with a ¼-inch space to spare. So a regular factory-made 10-frame hive may be used for 9 frames and secure the wide spacing. But if this wide spacing is beneficial, why not make our hives a trifle wider and still have 10 frames in them?

Mr. Chadwick is a beekeeper of experience and his statement is valuable.

Beekeeping in Carniola

Mr. Frank Rojina, in his interesting article on bee-culture in Carniola, calls our attention to a fact that is too much shadowed by the fame of Dzierzon. Mr. Langstroth, himself, reported the fact that Jansa discovered that young queens leave their hives in search of drones, long before Huber's investigations. This is mentioned on page 57 of our "Revised Langstroth."



Frank Rojina,
Who is a son of the Editor of the Carniolan Bee Journal, is in America working as assistant to Prof. Jager at Minnesota.

So we gladly insert and repeat the statement which he makes that Anton Jansa is called the first great beekeeper and Dzierzon only the second by those who have been acquainted with the facts. This does not detract from the fame of Dzierzon, for his discoveries were original, and it was through him that the facts became well known to the mass of beekeepers. How few there are who can really lay claim to an original discovery may be realized from this occurrence.

Honey Prices

The beekeepers are themselves responsible for the low prices that prevail so frequently. If they could be persuaded to hold for reasonable prices instead of selling at the first offer it would be an easy matter to get a living price. Too many sell at retail for wholesale prices. One of the large bottling concerns recently offered 10½ cents per pound for a carload of white clover extracted honey and failed to get it at that. As long as beekeepers will peddle their honey around the country at from 8 to 10 cents per pound in five-pound lots there is little hope that the big buyers will pay a decent price.

The man who retails his honey at 10 cents per pound as some even boast of doing, has no argument to offer when a bottling concern offers 7 cents in a wholesale way. A buyer could not buy a carload of honey at 7 cents, pay for bottles, labels, packing, etc., and sell at retail at 10 cents without losing money on the transaction.

The prospect for higher prices for next year is very good indeed if only the beekeepers can be made to see that they should demand a living price for their product. They should at least have sufficient consideration for other beekeepers to keep up the retail prices. In the middle West not a pound of honey should be retailed at less than 12½ cents per pound in 10-pound lots, or 15 cents per pound in smaller quantities. If the beekeepers will exercise business methods in disposing of their crop, there is every reason to believe that good prices can be obtained.

We warned our readers not to get scared because of the big crop last season, but many did. Some sold the best white honey at 5½ cents, when if they had taken our advice and held on they would have sold it for 9 or 10 cents in large quantities. If we don't get a living price let us put the blame where it belongs—on ourselves.

L'Apicoltore's Fiftieth Year

The above mentioned publication is now entering the 50th year of its life. It is the official organ of the Italian Central Association of Beekeepers, and has been sent to us as honorary members of this association since its third year, 1870, a period of 47 years. It is one of the most progressive bee magazines in the entire world. Its January number contains translations from Gleanings, from Dr. Phillips' book, "Beekeeping," from the American Bee Journal, from the British Bee Journal, with quotations from some of our leading writers, such as Dr. Miller, W. D. Wright and others.

The January editorial of this magazine mentions the names of a few leaders who have helped to organize Italian beekeeping but who have disappeared: The microscopist Gaetano Barbo; B. Crivelli; Dr. Dubini, author of L'Ape (The Bee); C. Fumagalli; Chas. Dadant; Dr. Metelli; A. Cadolini; Profs. Barbieri, Clerici and Mona, the last named a noted exporter of Italian bees; and lastly Rauschenfels, late editor of L'Apicoltore. Count Visconti, who is still living, is another of the early workers. But the future is to the young men, under the direction of V. Asprea, the present editor. Our good wishes go to the generation who will continue the work of the elders. There is always room for progress and Italian bee-culture will hold its rank. The Italian bees have a reputation throughout the world, and the Italian apiarists will remember that "Noblesse oblige."

Two other magazines, "L'Apicoltura Italiana" and "L'Apicoltore Moderno," are helping the good work.

Queen-Rearing in Italy

We have before us a "Manuale di allevamento delle api regine" (Manual of Queen Rearing) by Vincenzo Asprea, the able editor of L'Apicoltore. It is a small book of 243 pages, gotten up in the neatly artistic manner customary in artistic Italy.

This work is a resumé of the different methods in vogue for the rearing of prolific queens of best honey-producing qualities and should be commended to the Italian apiarist, for whom it is fully as important as such work would be in any country, since the entire world looks to Italy for high grade bees.

The Doolittle method, the Alley method, the Pratt (Swarthmore) method are all explained, with quotations from Sladen, Giraud and other experimenters who have suggested improvements.

Thus far only a few Italian breeders have followed modern methods in queen-rearing, but they are leaders. The book mentions our well-known friends, Penna, G. Piana and Piana Brothers, as well as Messrs. Malan and Bozzalla. But it is to be hoped that the study of as thorough a treatise will induce many other Italians to adopt the latest modern methods.

Our kind friend, Dr. Triaca, has our thanks for sending this excellent treatise to us.

Seventy Years of Beekeeping

The 4th installment of "Seventy Years of Beekeeping" will not appear until May, owing to lack of space. There will be at least two more numbers of it.

Preserve the Bee Magazines

A few days ago I was astounded and highly pleased to receive a letter from our good Italian friend, D. Barone, now at Medina, Ohio, asking me for the loan of the past five years of the Italian bee magazine, "L'Apicoltore." Luckily I had those five years, not a number missing, in spite of the submarines. I have 46 years of this magazine in my library. I was about to send the entire lot to the bookbinder when this request came. They will be bound by and by and placed side by side with the entire files of the Revue Internationale d'Apiculture, Gleanings, and our own American Bee Journal. We have also all of L'Apiculteur, The Review, and a score of other lesser lights. Keep your bee magazines. In years to come it will be a delight to peruse them again.

Michigan Life Members

On page 11 of our January number, mention was made of the election of C. P. Dadant as a life member of the Michigan Association in company with A. I. Root and Dr. C. C. Miller. This information was imparted to us by E. D. Townsend, who had modestly neglected to say that he was also elected a life member at the same time and for the same reasons, "Services rendered to beekeeping." We now correct the apparent omission of his name in the list, and since

"On their own merits modest men are dumb,"

we take this opportunity of saying that Friend Townsend is publishing an excellent magazine, the "Domestic Beekeeper," which is taking the place of the "Beekeepers' Review," and bids fair to become as valuable as the Review was in its best days. We feel proud of his company on the list of life members of the oldest State Association of beekeepers in the United States.

Obituary—David Clayton Polhemus was born Dec. 7, 1861, at Silverton, N. J., and died Feb. 13, 1917, at Lamar, Colo., aged 55 years, 2 months and 6 days.

He and his brother Charlie went to Nebraska in the spring of 1883, and in the years following his brother John and wife also went to Nebraska, and the three brothers were among the early settlers of Harlan county.

On April 17, 1889, Mr. Polhemus was united in marriage to Christina Peterson, and to this union were born three children, Clayton David, Edgar Charles and Millie. In the spring of 1895, the family moved to Las Animas, Colo., and in a short time baby Millie died. In May, 1900, the family moved to Lamar, and in April, 1902, the mother was called to her heavenly home.

In August, 1904, Mr. Polhemus was married to Cora Douglas, of Topeka, Kan. Since this time Lamar has been his home.

Mr. Polhemus had but returned from the meeting of the National Beekeepers' Association, being elected vice-president of the organization and also president of the Industrial Section. At the time of his death, he was president of the local school board; his activities along educational lines have always been the admiration of his fellow citizens. He is survived by his wife and and one son.

Don't Neglect the Bees

In all our Northern and Middle States, April is the month for examining colonies, making sure that they have laying queens, enough honey and pollen and sufficient poplulation to carry them to fruit bloom.

Be sure and examine all dead colonies, closing up the hives after having removed the dead bees. If there is any disease of the brood in your vicinity, be sure and examine the combs of all that have died. Where there is any dead brood a very careful diagnosis should be made. If there is a ropy foulbrood or any doubt concerning dead brood, send samples of it to Dr. E. F. Phillips of Washington, D. C., for determination of the exact condition.

Missouri Foulbrood.—Dr. L. Haseman, State Entomologist at Columbia, Mo., would like to correspond with beekeepers who may have foulbrood among their bees, in view of treating them and also of making experiments upon the disease. He will gladly extend his help to any Missouri apiarist who will write him if in need of instructions.

No. 5.—Among Eastern Beekeepers

BY THE EDITOR.

ON Aug. 23, I again started from Albany with Dr. Gates, although the field meets were all over. This time we were bent on visiting leading beekeepers around Syracuse.

Starting at 9:00 a.m., we traveled the entire distance, 150 miles, before 6:00 p.m. Fine roads, no dust, no mud.

Coming to the outskirts of a city, about midway, we noticed two policemen who signaled for us to stop. We looked at each other, wondering which one of us had committed a crime. As we neared the agents, they glanced at the occupants of the car and at once signaled for us to go on, as if we were not the parties they were looking for. So our curiosity was aroused and we asked what was the matter. "Infantile paralysis," was the reply. At that time this dread disease was raging in the large cities, and they were on the lookout for children coming from infected spots. Farther on we noticed the same solicitude, also warning signs, and when I left Syracuse three days later, half a dozen hospital nurses labeled "Inspectors of Health," were awaiting the arriving train to examine all suspects. It is by such methods that this terrible scourge has been restricted so as to cause comparatively little damage. It is by somewhat similar action that the bee diseases may be lessened and overcome. The few beekeepers who object to apiary inspection should understand that such inspection, if managed by practical and well informed officials, is not only advisable but indispensable in these days of active traffic in both bees and honey.

ALONG THE MOHAWK VALLEY

Syracuse, located in the center of a fertile valley, has successful beekeepers in all directions. We could not hope to visit them all in three days, and this was the limit of my time. We began with Doolittle and Clark, about 30 miles away.

Our old acquaintance and contributor does not need any introduction. He is five years my senior, and like A. I. Root, L. C. Root, and myself has taken a back seat in the work of the apiary. In his case it was unavoidable, for he has been for years giving his entire time to an invalid wife. This must strike a sympathetic chord in the heart of his brother beekeepers. He is fulfilling a duty.

MR. DOOLITTLE DISCUSSING BEEKEEPING WITH MR. AND MRS. P. G. CLARK

P. G. Clark, Doolittle's partner, helped by Mrs. Clark, has the care of some 175 colonies of bees and 250 nuclei for queen-rearing. They live within calling distance from the Doolittle home.

In the nuclei, the frames run crosswise instead of lengthwise; that is to say parallel to the entrance, so that the current of air is excluded from all but the front comb. This is what the Europeans call the "warm comb system."

The queens are reared by the Doolittle method, of course. We examined a few that were beautiful. I remarked that I did not care for the looks of a queen if she was prolific and her bees pure and good honey producers. Doolittle replied, with a chuckle, "You like to look at a pretty girl, why not at a pretty queen?" That is true, and pretty queens are not to be despised. Mr. Clark showed me a shipping-cage of his own contriving, arranged for shipment to foreign countries. It seems to be the prevalent opinion that queens are often stifled to death in the mail sacks. His cages are square and have openings for air on all four sides and the top and bottom, which lessens the chances of suffocation.

He has a simple way of preserving combs. We all know that moths rarely lay eggs in a comb which is exposed in the open air. So he has racks under the projecting eaves of his honey house and the combs are hung there winter and summer. A few were there, when we came, and I examined them. They were perfectly free of moths though they had been there since the previous fall. The outside ones looked rather weather-beaten, but sound.

For the benefit of those of our readers who think it is unworthy of a beeman to wear a veil, let me say that although their bees are very peaceable, Doolittle wears a veil all the time in the apiary. His veil is fastened to the rim of a straw hat and is held at the bottom by weights at its four corners. In this case the weights were iron nuts of ¾-inch size, a very simple fastening.

The crop was good and we saw a fine lot of clover honey. There as elsewhere it was white and alsike clover. Buckwheat is plentiful in the fall.

I learned there that bee eggs could be safely shipped quite a distance without hatching if kept on ice. They shipped eggs in this way to Dr. Gates, and he reported that they had arrived safely and hatched well, after four to six days.

We were entertained with great hospitality by Mrs. Clark. Before leaving we visited the Doolittle sugar-bush, a grove of fine hard maples interspersed with basswoods, only a few rods from the apiary. Maple sugar and honey make a good combination for a beekeeper to sell.

S. D. House, of Camillus, was the next man on our program. Mr. House is a very extensive beekeeper, who believes in the sectional hive and a small brood-chamber. He appears to do very well with both, as we saw tons and tons of honey. But what a lot of swarming! He told us of having had 18 swarms come out at one time, if I am not mistaken. His success with bees is an evidence that it is not so much the implements as the beekeeper's system which makes for success.

Mr. House places his yards four or five miles apart. That indicates how far he believes bees will go for honey. But he gave me a new idea on this point. He believes that bees go farther for strongly smelling blossoms, because these can naturally be scented farther away, of course. This reasoning is so obviously and plainly correct that I do not understand why we did not think of it ourselves. That is why, in buckwheat sections, the bees are claimed to travel farther than in many other sections, where the honey is less odorous.

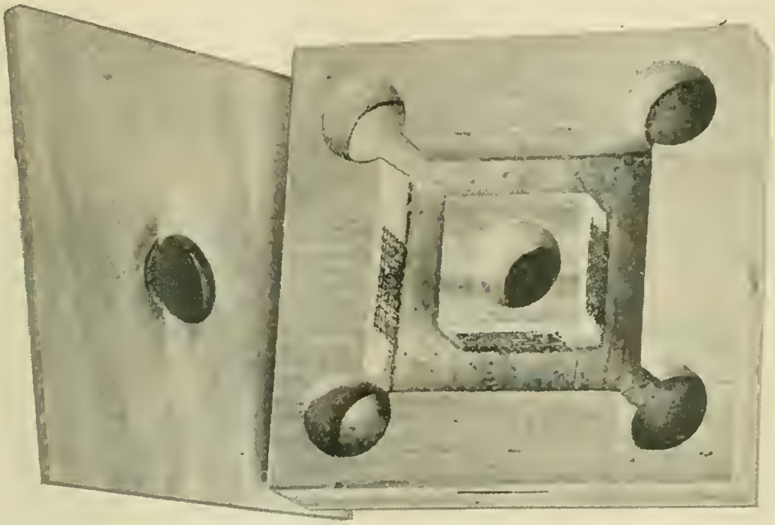
They had an epidemic on adult bees during the spring of 1916, from June 20 to 25, which resembled the Isle of Wight disease, the bees dying in hundreds in front of the hives, without apparent cause. It was during a period of excessive moisture and the affected bees were three weeks old or older. Some colonies were very much weakened by it. The reader will remember that a similar trouble was reported from Amherst at about the same date in similar weather conditions.

Mr. House supersedes his queens every year and holds this operation is worth easily $2.00 per colony. He wants late reared queens, so their fertility may be at its highest in the spring. But this is evidently not sufficient to hinder natural swarming.

Our next visit was to Mr. Irving Kenyon, with whom we remained but an hour or two. Mr. Kenyon's honey crops have been subject to a peculiar trouble during the past two years. Some of it ferments in the cells, after it is capped over, and often bursts the capping. The trouble has existed in his product for several years, but has been on the increase lately. He wonders whether it is due to a microbe within the hives, perpetuating itself from year to year, or whether it is due to the location. I thought that it might be due to some special bloom. Can any of our readers suggest a possible explanation? The trouble has been so annoying that our friend thought of resorting to the extreme remedy of transferring all his bees upon sheets of foundation in the spring and rendering all the old combs into wax.

On the morning of another fine day, we visited Mr. Oscar Dines, at his apiary, on a hillside of the Onondaga Indian Reservation. And let me say at once, for the benefit of our foreign readers, that although several hundred Indians are still living there, they are of a very modern type, their women wearing clothes of the latest fashion when coming to the city. Were it not for their broad smooth faces, beardless in all cases, their smooth coal-black hair, their reddish skin, no one could imagine them to be descendants of the proud, cruel aborigenes, depicted less than a century ago by Fenimore Cooper, and living exclusively on the fruit of the chase.

Mr. Dines lives in town. His apiary of some 300 colonies is on a pretty slope, in a good region, a half mile or so from the end of the interurban line. His crop was immense, his bees beautiful Italians, with gentle disposition. He, like friend House, uses a sectional hive, the frames of which hang freely and are a delight to handle; they are so short and convenient. We opened several hives together and he expressed to me his great enjoyment of beekeeping. He is happy among his bees. When he sent me the accompanying photo of his apiary, he wrote in part:



QUEEN-CAGE BY MR. CLARK
Air is given to the bees from every side

"Enclosed you will find a remembrance of the pleasant visit we had at my apiary, which was only too short for what we wanted to say. The honey house is in the back ground; the lady is my daughter, Mrs. Parker; the man standing you recognize. The colony that yielded so much honey is not visible in the picture. My honey is all sold and shipped away and everything cleaned up and put in its place ready for next season."

Mr. Dines is the inventor of a very simple swarm-catching device, to be used however only when you are in the apiary and see a swarm in the act of emerging. It consists of a cage made of two boards for a frame work and four sides of wire mesh, with an opening across one end to fit on the entrance of the hive. This cage is placed in front of the colony that is in the act of swarming, and the bees rush into it, since they cannot do otherwise.

If the queen has been caught with it, it is only necessary to carry this cage to the front of an empty hive and the bees will hive themselves. Two or three of these cages, in very active swarming time, give the apiarist quite a relief, as each of them takes care of a swarm without trouble.

DOOLITTLE & CLARK IN MR. CLARK'S APIARY NEAR BORODINO

The last man visited was Mr. F. W. Lesser, manager of some 800 colonies, scattered over quite a territory. Riding with him in a "Tin Lizzie," we visited an apiary located in the brush of a hillside. The hives were tiered three and four stories high and promised a big crop. Mr. Lesser complained of the same adult bees trouble of June, as we mentioned in speaking of Mr. House. But he ascribes this trouble to unhealthy pollen. Time and experiments only will give us a clue to this problem. He does not think bees work profitably at a distance of over two miles, and says bees located in the basswood timber will harvest twice as much honey as those two miles away from it.

I have now reached the end of my eastern visit. After a short stop in Chicago, I arrived home at the conclusion of the 32d day, glad to have met so many, but gladder still to be among my people again.

Building Up a Strain of Bees

BY G. M. DOOLITTLE.

"How may I build up a strain of bees, and what are the dangers of inbreeding?" is a question on which a writer requests that I give my views through the columns of the American Bee Journal. Those who keep bees, with possibly a few exceptions, keep them for the profit they yield; so I take it for granted that the questioner wishes to build up a strain of bees which will give him the most honey either comb or extracted.

When I started in beekeeping, in 1869, there were no "honey bees" to be had in these parts save the "black bees," and they did not come up to the high standard which I desired. In 1873 I procured an Italian queen, reared queens from her and gave these young queens to about half of my colonies. The next year I kept a careful watch of proceedings, and jotted down in an old diary: "I find the Italians proof against the wax-moth. They do not desert their hives in early spring; and whenever a small amount of honey is obtainable they gain in stores, while the black bees require feeding."

Since then I have tried every variety or strain of bees which has been brought into the United States, but found none, for my locality, which could equal the Italians. Having settled on the Italian bee as the best, I found that *even these bees* were not alike profitable. There are few careful observing beekeepers but have noticed the lack of uniformity of yield between colonies. This may be from two or more reasons or a combination of them.

The colony giving the lesser amount may lack enough bees of the right age for gathering. The difference may be in the bee itself. The thorough understanding of the right management of colonies to secure the best results has much to do with the yearly product in honey, and the very best queens obtainable will never be a success where the management is faulty. A management that has no eye toward the date of blooming of the flowers in the locality will rarely give a satisfactory return for the time and labor expended, even with the best bees the world affords.

But let us look at the bee side. From reports and a long experience in visiting different apiaries, I am led to think that the variation in yields is nearly if not quite 50 percent between the 10 highest colonies and the 10 lowest, where the apiary numbers 100 colonies. That the strain of bees has much to do with this is certain; and when apiarists fully realize the difference in stock, the question of breeding will receive as much attention as is necessary for a successful management.

In my early work in the improvement of stock, my thought was that the queen that would lay the most eggs must certainly be the best. The idea proved to be a mistake. Some queens producing not nearly the number of bees that others did would give much better results in surplus honey. A few years of experience will convince the close observer that it is not the most prolific queens that have the strongest colonies at the beginning of the clover flow, or give the most substantial results for the season. These facts being known, it remains for the apiarists to find out the reason. If we cannot account for one colony collecting one-half more or twice as much as another in the same apiary, we can take the short cut and supersede the queens of the less productive ones with the strain which gave twice as much.

Oscar Dines, of New York State

It is hardly necessary to argue why queens should be scientifically bred. "The survival of the fittest" will not develop a better bee than we have now, for she cares for nothing save the perpetuation of the species. How often have I heard apiarists say, "If each colony reached the high standard sometimes reached by a single colony, my honey crop would double." Careful breeding will do much toward this, and with it reduce in proportion the cost of management and equipment. This means a greater profit.

We have been told by the successful honey producers that the introduction of new "blood" helps much by avoiding the evil effects of inbreeding. This, if we accept the theory, can be brought about by bringing home colonies or queens from outapiaries, by exchanging queens with other successful apiarists, or by an occasional purchase of a good queen.

There are many points to breed for, but the most eagerly sought is, as I said at the outset, greater honey production. But in breeding for profit we often run against traits that are almost a part of the bee itself; and to change which would mean to change the bee. To illustrate: Let us take the swarming impulse or the desire for increase. By persistent breeding we can remove some of the conditions which tend to produce swarming, thereby reducing this tendency to as low a point as possible, but to eradicate it entirely seems out of the question. By rearing our queen-cells in colonies whose desire to supersede their queens is uppermost, quite a gain can be made in this direction. The accounting for the difference in productiveness of different colonies is not always easy to tell.

I incline toward the vitality and longevity of the workers of certain queens as being very desirable, as such have the power of continued endurance. When workers emerging from Aug. 30 to Sept. 10 were found doing good work at gathering nectar the next year on June 20, with a few still holding out on July 4, I was not "slow" in taking the hint. I lost no time in rearing young queens from their mother, so that these young queens could replace all inferior stock. When the mother of this long-lived stock showed a disposition to place the maximum number of bees on the stage of action, at the blooming of the flowers which gave a surplus, without any special management or manipulation on my part; and when they entered the sections with the first nectar, without a desire to swarm, I considered this queen of still more value in building up of a strain which should be superior to what I had before attained.

Whenever such a queen is found she should be kept as a breeder, even should she live to be five years old, as did this queen, rather than have her life "snuffed out" annually, as is strenuously advocated by many, in their desire to have each colony presided over each spring with a queen less than a year old. As the queen is fundamental to the colony, we should "strain every nerve" toward better queens. I doubt the wisdom of advocating the "baby nuclei plan," together with the caging of fresh emerging queens from one to eight days, as has been done to a considerable extent during the immediate past, in order that they may be *cheaply* reared and fertilized through a saving in nuclei.

As to the "dangers of inbreeding," asked about by the questioner, when the fact is remembered that to all practical purposes all drones are the "sons of their mothers," this inbreeding matter is little more than a myth. Inasmuch as a queen that has never mated with a drone can lay eggs which will produce drones having full procreative powers, and the mating of the queen seems to have no essential effect on her drone progeny, the grand-daughters of any queen cannot become more than half sisters unless they mate with drones produced by their grandmother. Therefore, if a certain queen is used to rear queens, and another to rear drones, even did the young queens mate with the desired drones, no inbreeding would be done that need worry the practical apiarist whose ideal is honey production. Then when we realize that drones, for miles around, congregate in certain places in the air, and that our most carefully reared queens are almost sure to go to these congregating places, any danger, for the practical apiarist, of inbreeding need not even disturb his dreams.

Borodino, N. Y.

A Queen Clipping Story

IT was many years ago, on Easter day, during one of those radiant spring days that one appreciates the more because one has missed them so long. The bells of the churches had already announced the solemnity of the day, and my wife had said to me: "I hope you will not fail to come to church today." I had replied hurriedly: "Yes, yes, certainly." But—how it happened I do not know—when the bells were rung for the third time, I was in the apiary opening a hive of bees.

I had six hives of bees in the remotest rear of my garden, and we had a neighbor whose principle it was never to let anything get lost. So whenever a swarm would settle in his lot, he would run and get a straw skep, hive the swarm without saying a word and take it away. There is nothing so vexing as to lose a swarm in the spring, but when you know it has been taken on the sly, it is still worse.

I had read in a foreign bee journal that one could avoid the loss of swarms by clipping the wings of the queens, and this was what I was aiming to do, on that Sunday. At first everything went well, but when a man has handled a spade or a hoe all the week, it is somewhat difficult to hold a queen. They are so frail that one never knows whether one is holding them right or crushing them. Several times it has happened to me to say, in releasing a queen: "There, I killed her!" As I had noticed in that same journal that one could clip the wing of a queen without seizing her, I decided that I would try that method on the second queen. But when the fingers are stiff to handle a queen, they are just as much so for holding scissors. I was holding the frame in one hand and the scissors in the other, following the queen who was passing from one side of the comb to the other, or hiding under the workers. A clip of the scissors is quickly done, but you must do it properly and not clip a leg or the end of the abdomen with the wing. I believe the man who advised that method is a theorist who has never tried it himself, unless he be a legerdemain performer.

I had been following the queen with my scissors for perhaps five minutes when she reached the top of the comb, and probably becoming convinced that I was after her, she took flight just like a hen that you are trying to catch. It was the first time I had ever seen a queen leave the comb; she passed near my face; I looked up to follow her, but the sun blinded me and she disappeared. I hunted for her for a quarter of an hour on a little tree which was near to me; I investigated one leaf after another uselessly. She was lost.

Was it because of Easter day? I had no sooner closed the hive when I heard a voice saying, "Serves you right, you pagan! You imagine that you can examine your bees, unpunished, on Easter! Serves you right! A queen lost, a crop lost, 40 pounds of honey! At 20 cents that makes $8.00! A well deserved fine, not too much!"

But this made me peevish. "Do you think that I have no right to look at my bees when I feel like it? I'll show you." So I opened the four remaining colonies and clipped the wings of the queens by catching them across the corslet. But the thought, "Serves you right," kept ringing in my ears, in spite of myself. The sun did not seem so bright, and things looked gloomy. I put everything in order and walked towards the house, thinking: "Don't tell any one about this at dinner, for the "Serves you right" would be likely to keep alive until next Easter.

I walked into the house. But when I lifted my hat off, I heard a "frr frr," the beating of wings. Oh my, my queen, my queen, there she was, on my hat!! I caught her, ran to the hive and let her run in. I was in such a hurry that I even forgot to clip her wing. The sun had become radiant again and the day lovely. I was so happy, not so much for my crop returned in perspective, but to be able to answer that voice which said, "Serves you right." It seemed to me that I was entitled to reply: "Ha, not so big a sin after all." But just the same, since that day, I have never opened my hives on Easter.

—Bulletin de la Société Romande.

APIARY OF OSCAR DINES, OF SYRACUSE, N. Y.
The largest number of colonies I have seen in one apiary, nearly 300. Mr. Dines enjoys beek eeping hugely

Moving Bees

BY L. L. ANDREWS.

THE moving of bees has become so common over most parts of the United States that I will give only my personal experience, hoping that it may be of benefit.

If the apiary is to be used with the intention of immediate honey-gathering, large colonies must be used. If the apiary is to be built up to honey-gathering strength after moving, other methods can be used.

To move short distances, say up to 50 or 60 miles, tight hives and good ventilation are the prime requisites. I use a screen made of ordinary window screen on a frame made of ⅞-inch lumber to tack over the hive after the cover is removed. Close the entrance with a strip of burlap soaking wet.

I will go more into detail in my description of moving long distances in order to get the later crop. In Utah the honey flow is looked for about July 15, while here most of our honey is made by July 1. By crowding a little each way, we get most of the crop here and get up there in time to get a crop also.

In preparation, a good way is to figure on about one frame of honey, one dry comb, three of brood and honey, a good supply of young bees, and above all a young queen. Nothing is so provoking as to have a queen break down and the bees try to supersede her in the midst of a honey flow that at best is of only a few weeks duration.

Move all colonies some distance a day before you expect to ship, to screen out all old bees. Place some hives with combs and a frame of brood —about one hive for each 20 colonies moved—on the old location to catch the go-backs.

With the hives to be moved, fix all frames secure. If self-spacing, crowd to one side of the hive and drive a six-penny nail in the end of the hive to hold the frames secure. Place the screen over and tack lath on to hold secure. I close entrances by tacking on pieces of lath, leaving a space between the width of a lath. This space a small piece of lath will fill quickly when the hive is ready to close.

Have plenty of help, and when you expect to ship get everything ready and load quickly. Place hives crosswise of the wagon and lengthwise of the railroad cars. Place the hives about three inches apart in the cars, and many leave an aisle so that you can go the full length of the car to water during hot weather. It is yet a disputed question whether it pays to water during shipment, but we have always done so. We used a squirt gun much like we made out of elder when boys.

The best results are obtained by shipping nothing but sealed brood, as the bees will suck the uncapped brood dry, when the hives become heated.

In placing the hives in the car, put a row of hives across, then put two parallel pieces of 1x2, or larger, the width of the car on the hives and make them secure. If the car is not packed full, brace strongly in the middle, as no one has any idea how much jamming the car will get endwise. And to have a carload of bees get to moving and break open is some trouble, I assure you.

In shipping by rail it is necessary to have an attendant accompanying the car, as bees go as live stock. After arrival at the destination, haul to your location as soon as convenient. Avoid as much hot sun as possible and release the bees at sundown. Sprinkling just before you open the hives will help to quiet them.

If the hives should happen to be on movable bottoms, it would be a great help, as the bees that have died on the trip will be on the bottom and often clog the entrance. If the journey has been long and the weather hot, you may have trouble about the bees swarming out.

I tried moving some strong colonies to Utah, a distance of about 800 miles, but the results were not satisfactory. Moving short distances requires no great amount of knowledge, but shipping hundreds or thousands of miles calls for skill, and those who have practiced it for years still find some room for improvement.

Corona, Calif.

The Prevention of Swarming

BY THE EDITOR.

THERE are many methods in vogue for the prevention of swarming, but they are nearly all by manipulations which require a great deal of time, at the busiest season. The method which we sustain as best and which I propose to describe requires no active manipulations during the honey-gathering period, outside of the necessary ones and is what might properly be called a "let alone" method.

As early as 1870, we found ourselves with a sufficient number of colonies to make swarming undesirable. Besides the objectionable increase, in numbers, swarming caused an increase of labor when we were busiest. The method which we then adopted has been in constant use by us since, with additional improvements. We do not claim that swarming can be prevented altogether, neither do we claim that it is as easy to avoid it in the production of comb honey as in that of extracted honey. But the success of our management during the past season is ample evidence that the principles enunciated below are in the right direction. Out of about 525 colonies, spring count, we gathered less than 30 swarms, but harvested over 200 pounds per colony, while a neighbor of ours, less than two miles from our home apiary, gathered 12 swarms from five colonies, owing to his neglect of proper attendance to their needs. The requirements are as follows:

1. An ample brood-chamber for the needs of a prolific queen. If the queen finds herself confined to a scanty lower story by excluders or otherwise, she will make it known to the bees or they will instinctively notice it themselves and prepare queen-cells.

We use a very large hive, large brood-chamber and large supers. But it is not my purpose to advise beekeepers to change their system and the dimensions of their hives. Even with an 8-frame hive, the prolific queens may be accommodated. Doctor C. C. Mille uses a second brood-chamber for prolific queens and removes this, at the opening of the crop, leaving in the lower brood-chamber the best brood-combs. In some way, the queen should be accommodated during the heavy breeding season, and especially at the opening of the crop.

As an outcome of the first proposition, there must be ample room for stores. Some beginners are astonished to see old practitioners like Dr. Miller giving their bees as many as three supers at one time, on a strong colony. But if the queen is very prolific, and has been breeding plentifully as nature dictates, her colony may be able to work in each of two or three supers as strongly as they would work in one.

2. The use of comb foundation in full sheets in the supers when working for comb honey, or of fully built combs in extracting supers, has also a great deal of influence upon the prevention of swarming. True, full combs are much more efficient in this, but comb foundation aids greatly. There are days when the crop is so heavy that all the available cells are at once filled with nectar. If the bees have to build combs and thus find themselves crowded for room to deposit their loads, swarming may ensue. But with full sheets of foundation in every section, the work of comb building is much simplified and the necessity of producing sufficient wax reduced. Of course, it is understood that the supers have been supplied to the bees before they found themselves crowded for space, for if the swarming impulse is once gained, it is next to impossible to overcome it by any manipulations whatever.

ASHCROFT APIARY OF L. L. ANDREWS

HAULING BEES—L. L. Andrews

3. It will be entirely useless to expect the bees to remain contented and fill the supers, if the ventilation of the hive is inadequate to the requirements of the enlarged population. All observers have noticed the great tax imposed upon them by the simultaneous increase of heat and discomfort brought about by a summer temperature and a daily addition of some 2000 or 3000 hatching bees to the population of powerful colonies. Yet many beekeepers do not think of enlarging the means of ventilation. Thousands of colonies are compelled to leave a large part of their population idle, hanging

on the outside of the hive for days and sometimes for weeks, because they are unable to sufficiently ventilate the inside of the brood-chamber and supers. We must remember that every corner, every story of a hive is in absolute need of a current of fresh air which is supplied at great pains by establishing a line of fanning bees, incessantly forcing pure air in and foul air out. Yet in many colonies there may be but a shallow entrance, partly closed by clustering bees, and perhaps on the inside above the brood-combs there may be some partitions, queen-excluders, separators, honey-boards, etc., all in the way of ventilation. We raise our hives from the bottom, in front, from one to two inches, when there is a likelihood of the bees being unable to ventilate otherwise. We have even set the supers back a half inch or so, during the hottest days, to secure a current of air through the brood-chamber in very hot weather. But this must not be continued too long, for it might interfere with the storing of honey in the front of the supers if the weather changed. The bottom ventilation, however, must be ample, ample enough in fact to allow all the bees to work, so that none will remain clustering on the outside during the continuation of the honey crop.

4. As help to ventilation and comfort by decreasing the heat, a good roof is needed when the hives are exposed to the sun. We use coarse roofs on our hives, even when they are located in the shade of trees. Our roofs are made very cheaply of large discarded dry goods boxes and are flat. They are cleated with 2x2 inch scantling on the rear underside and a 1x2 inch strip under the front end. This secures a slope of an inch, which may be turned the other way to shed water in rear. The roofs are much wider than the hive and shelter the top from the effects of the weather.

5. The queen must be young. Some beekeepers believe in requeening every season after the honey crop. I do not believe in so radical a measure. In fact, I would not feel capable of killing a first-class queen after only one season of use. But I do believe in keeping only prolific queens and if the queen has proven under grade she should be replaced. Old queens who are losing their fertility are a frequent source of swarming. The workers prepare to supersede them, just as soon as they notice their reduced laying, by rearing queen-cells. The old queen in a pique leaves with a swarm. So we must replace our old queens every fall or late summer.

6. A large number of drones is an incentive to swarming. Some of the old-time beekeepers thought the drones were beneficial because the colonies having many drones swarm readily. They considered swarming a desirable thing. So it was, when dividing or artificial increase was unknown. They also thought the drones were useful in keeping the brood warm. So they would be if they did not have to be kept warm themselves when they are reared and also if the bees did not kill them, as they are sure to do, in bad weather.

There is not any doubt that the excess of drones in the hive promotes swarming. Those big, noisy fellows remain in the way, all day long, except for a flight during the warmest hours, being then still more in the way of the active workers. Although, as Dr. Bruennich says, there is a certain fondness of the workers for the drones, during the crop, which changes to hate afterwards when they see them helping themselves from their hard earned stores, yet their numbers make for discomfort and a crowded condition

In a state of nature, according to the best authorities, bees build from one-seventh to one-tenth of their combs of drone size, in the brood-chamber. If only one-twentieth of the combs of a normal colony were filled with drone-brood, this would supply nearly 2500 drones per colony. We should permit only two or three of our very best breeders to rear so large a number of drones, for 5000 to 10,000 drones are enough for any apiary.

Some beekeepers see no way to destroy drones, but to use a drone-trap. That is to say, during the busiest, warmest season, when their bees need the greatest amount of ventilation, they place in front of the entrance a cage made to catch drones and queens, the very worst encumbrance that may be devised, for the sake of catching the drones as they emerge, having to remove them every evening or suffer the odor and encumbrance of dead drones in front of each hive.

Some other beekeepers think of doing better by cutting off the heads of the drone-brood, in the cells, with a sharp knife. This is a terrible mess. It compels the bees to pull out all those drones and carry them out of the hive. Then the same drone-comb is carefully cleaned and within a day or two the queen again fills it with eggs that will produce a second batch of drones. That is to say, we have spent a lot of energy rearing expensive drones, and now we are rearing another lot.

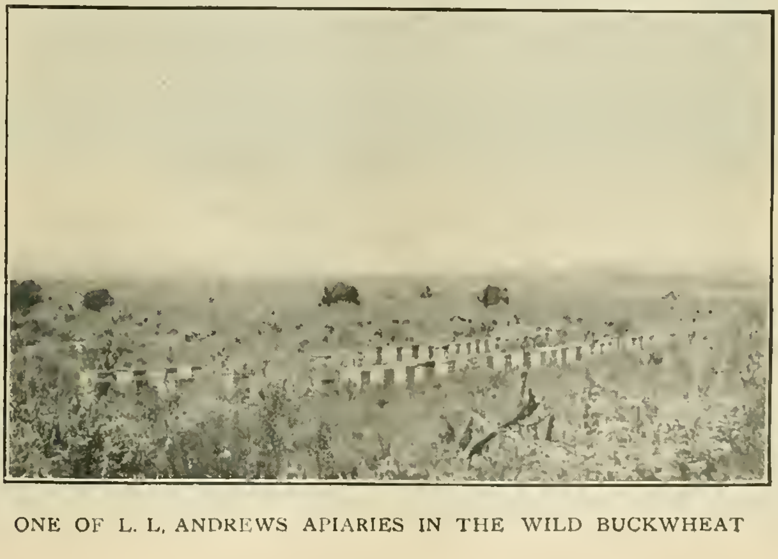
It is probably impossible to rear no drones at all, but if we remove all the drone-comb, early in the season, as nearly as we can, and replace it with worker-comb, there will be drones reared only in imperfect cells here and there or in out-of-the-way corners. Instead of rearing 2000 or more, we will perhaps rear 200 or less in each colony, a very important difference when we consider the comfort of the colony. Remember that if we leave the bees to their own devices, when we remove the drone-comb, in early spring they will be sure to build drone-comb in the same spot. So it is important to replace it with worker-comb.

It has often been stated that bees will tear down worker-comb to build drone-comb in its place. I believe this is an error of observation. Four different experimenters, to my knowledge, have tried the hiving of a swarm in a hive full of drone-comb. If bees would tear down one kind of comb readily, to build in the other kind, they surely would have done it in these cases. But in each case, the bees followed the same method. They did not tear the comb to rebuild it, but only narrowed the mouth of the cells to worker size and the queen laid worker eggs in them. The names of the experimenters who tried this are: E. Drory, of Bordeaux, former editor of the Rucher Du Sud Ouest; Mr. Thomas W. Cowan, editor of the British Bee Journal; Dr. Bruennich, of Switzerland, and myself.

There are instances, however, of bees building drone-comb on imperfect worker foundation. They are rare and are usually due to some defect of the foundation, which may have been stretched slightly in laminating. At the meeting of the beekeepers of Middlebury, Vt., the past summer, Mr. Crane mentioned having had about a dozen sheets of foundation thus changed, out of some 2000 used by him the past summer. These are only accidents. Accidents also are instances of bees building drone-cells on one side of the comb, while worker-cells are on the opposite side. In such a case the regular base is not followed and the cells lap over, showing plainly that they were irregularly built. Mr. Latham exhibited to me two square inches of such comb during the summer of 1916. These are only accidents. Such combs should be remelted and replaced by well built combs.

When we replace the drone-comb with worker-comb in all but our best colonies, we do away with undesirable drones, for the mating of the queens. We save food which would be wasted on these undesirable beings, since the drone costs at least one-half more to rear than a worker, and has to be fed as long as he lives.

Replace the drone-comb with worker-comb, as much as possible in your


ONE OF L. L. ANDREWS APIARIES IN THE WILD BUCKWHEAT

hives, early in the season and you will have much less to fear of the swarming fever.

7. The last condition which I can mention in the successful prevention of swarming is one which we have been using for years, but which I did not think of in that connection until the matter was brought to my attention by Mr. Allan Latham, the past summer. In exhibiting a hive at the Storrs meeting, Mr. Latham made the remark that the 1⅜ inch spacing of combs, from center to center, in common use, was a promoter of swarming. We have used the Quinby spacing of 1½ inches ever since 1866. The bees work as satisfactorily with the one spacing as with the other. In fact, the original advisors of either mode of spacing had no very positive argument to advance in favor of their method. But the 1½ inch spacing gives ⅛ of an inch additional between all the combs for the bees to cluster or move about during the breeding season. This multiplied by the height and length of the hive and by the number of frames gives an addition of 162 cubic inches of clustering space or ventilation, as the case may be. Think of the large number of bees which may be accommodated in such a space.

The standard hives of the present day are nearly all of the narrow kind. Nevertheless, the broader spacing is much the better, for the above named reason and also because it gives easier manipulation and more clustering space for the colony in winter. As I have said, we used the wider spacing for years, but I did not realize that our success in swarm prevention was in part due to this spacing. It is undoubtedly of great advantage in the prevention of swarming.

Let it not be understood that I lay any claims to the total prevention of swarming. That is a goal never to be attained. Neither do I lay any claim to breeding a non-swarming strain. But when some of our most practical beekeepers, such as I have met in the East, acknowledge, as one did, having had as many as 18 swarms out, at the same hour, in one apiary, I believe there is need generally of a more thorough understanding of the causes of natural swarming.

The advantages of this method consist in doing away with numerous hive manipulations during the honey crop, such as cutting out queen-cells, taking out brood, shifting colonies, returning swarms to the old hive, etc. All the required work outside of increasing the opportunities for ventilation and adding supers, has to be done during the dull season. I know that those who have excessive swarming, if they try these conditions, will find themselves greatly relieved by the results. Besides, they may be able to discover additional requirements, for there is always something more to be learned. If we are to judge of future progress by the past, there are endless opportunities for more knowledge, endless chances for progress.

My Neighbor's Garden

BY C. D. STUART.

I WOULD hesitate to call my neighbor a bore, as defined by a witty Frenchman. But whenever I attempt to talk about *myself* and my honeybees, he manages to switch the conversation to *himself* and his prune trees. I had been awaiting the opportunity to tell him that nature has no more effective pollinator than bees, and that without them he would have had no prunes to talk about; but the University beat me to it. A copy of their latest bulletin was sticking out of my neighbor's pocket when he arrived at my cabin on an errand of state—the negotiating of closer relations between his trees and my bees.

MY NEIGHBOR'S PRUNE ORCHARD—(Photo by John R. Douglass)

"Listen!" he began, excitedly shaking the bulletin in my face; "here's an old highbrow claiming that one colony of bees will pollinate 9991 prune blossoms. Yes siree, a genuine University guy!"

"You mean, one colony can pollinate one acre of trees, don't you?"

"No; blossoms. Man alive, just think of the number a hundred colonies would pollinate! If one tree has 9991 blossoms, 20 acres of trees would have——" There he stopped, found a newspaper and began to figure, on the margin, the benefits—to his prunes—of the proposed alliance.

With my neighbor, the juggling of figures has been elevated from mere pastime to the realm of accomplishment. He fairly "eats 'em." A scrap of paper, a stubby pencil, and millionaires spring into existence while you wait. Or, the same computations, done backward, and bankrupts are created with equal dispatch. It is not surprising, then, with such facilities at hand, that he himself has arisen—on paper—from the ranks of the small rancher, to the multi-millionaire class.

As for me, bankruptcy is a chronic condition, my neighbor having long since figured my bee ranch in the hills clean off the map, even pursuing it with strange-sounding words — one, more hostile than all the others, "depreciation," which, applied to any healthy enterprise will, in time, cause it automatically to disappear. By this mysterious calculation, I had already lost more money than in the wildest dreams I ever hoped to possess. (Luckily for me, the amount and price of my honey during this period of progressive disaster, remained normal.) Moreover, in his estimation, a beeman is a reproach to his family, a menace to the public and, socially, on a level with the herders of sheep and goats. To be strictly just, however, that is only my neighbor's *theory*. In *practice* his friendship has survived all handicaps.

On the other hand, my neighbor's fat valley land at "only $500 an acre," was about to be doubled, perhaps quadrupled, if the newspaper margin would only hold out. For if 1069 blossoms counted in the University experiment, could mature 193 prunes, nine times as many prunes would mature from 9991 blossoms, or over 1700 prunes to the tree; and with 100 trees to the acre of trees, he would harvest 3,400,000 prunes. Even now my bees stood only on a commercial footing, but at least they had been recognized. Somewhat saddened, I left my neighbor to his figures, and turned to the shimmering landscape with its background of purple hills framed by my kitchen window.

It was Blossom Day — California's unique, all-embracing, outdoor, democratic Easter, when all the earth is athrill with new life; a day that "when the ardent sun rides high, above the waiting trees; like fleeting clouds athwart the sky, range forth my honeybees, my resurrected honey-bees," unconsciously to fulfill their mission.

All Santa Clara Valley was in its Easter frock, and throngs of visitors from far and near had gathered to witness the ethereal spectacle, before the ocean breeze should spirit it away. And somewhere in the heart of the Valley nestled my neighbor's prune trees, adding their quota of loveliness to the Annual Festival of Blossoms. But the miracle was lost on the man whose mind's eye saw only additional trays filled with fruit drying in the sun, that my bees would make for him.

"Millions in it!" he muttered, feverishly setting down the final additions on a fresh bit of margin. "Why didn't you tell me?"

"Never had a chance," I retorted.

But my neighbor characteristically waved all past losses, in favor of future gains. "Three million, four hundred thousand prunes!" he repeated, "and with 40 prunes to the pound——"

"The more you get the smaller they'll be," I reminded him.

"—— will make 85,000 pounds—three times last year's crop—and if the price should go to 15 cents a pound, they'll be worth $12,750. Gee; I'll lift the mortgage and buy a Ford!"

"I don't think I care to move my bees," I concluded.

"W-w-hy? Plenty of room, and you're welcome to it."

"Truck man charges two bits apiece to haul 'em, and bees get around pretty lively by themselves, for nothing."

"I'll pay the truck man," he argued.

"Nothing doing. Bees prefer areoplaning."

"I'll pay you rent for 'em, too," he urged. "With all that money I'll have a bully stake."

"Providing the weather man permits," I amended. "Bees don't fly in wind or fog, and prune blossoms last only a week at the longest. Besides, there are 21,000 acres of prunes in Santa Clara county, and only 6500 colonies to do the pollinating!"

But those basic truths that I had hoped would act as ballast in my neighbor's flights, were cast overboard with the remark, "Some job for the bees! What *this* county needs is more colonies."

The sun's slanting rays had tinged the valley's gauzy robes with gold; a few belated bees were flying slowly hiveward; and still my neighbor soared. He was doing the sums all over again to include statistics on bee-pollination under possible adverse weather conditions.

Los Gatos, Calif.

April Beekeeping Problems in the North

BY L. V. FRANCE.

[The following summary of reports received and advice given to the beekeepers of Minnesota, by L. V. France, of the University Farm, will find practical application in most of our northern States during this month. This problem does not apply south of the 41st degree, except in very backward springs.—EDITOR.]

IN the Preliminary 1916 Beekeeping Survey of Minnesota, conducted by the University, Division of Bee Culture, reports gave information on the greatest April beekeeping problems. Bad weather, cold, rain, cloudy and windy, seemed to be the greatest evil, as 35.7 percent of the reports indicated. Twenty-five other reports named conditions that may be also directly influenced by bad weather, as to build up colonies; to keep them warm; to keep them strong; spring dwindling; to guard against sudden changes of temperature; lack of bloom until May, and inability to keep bees in the hives on sunny cold days. Seven reports considered proper windbreaks a spring problem; the brood gets cold and the queen stops laying. Over half, 56.0 percent, of the reports thus accuse bad weather as the greatest April beekeeping problem.

Food and feeding follow next in apparent importance, as eighteen or 11.4 percent of the reports indicated. Eleven of these reports were classified as "Lack of food"; six, "To keep bees supplied with stores," and one reports "Bees all right if honey lasts through April." Thirteen report 18.2 percent gave robbing as their greatest April problem. One answer tells its own story, "No April problems if I feed with narrow entrance." Lack of pollen was of sufficient importance as a spring problem to claim first attention in six reports, 3.8 percent. This lack of pollen probably is of more importance than indicated. "No April problems" is definitely reported by six parties.

Important miscellaneous and interesting questions follow: When to put on summer stands; queenless colonies; trying to handle bees in cold, damp weather; lack of knowing what to do in time; spring dwindling; rush of farm work causes bees to be neglected, and some die from robbing or starvation; many perish when searching for water; cover the hives to protect brood from chills; keep the hives sheltered; see that bees get water and pollen; no problems if fall feeding is adequate; old bees die too soon, etc.

WHAT SHALL I DO IN APRIL?

If the bees are all right in the cellar do not take them out until there is plenty of pollen, willow, soft maple, etc. Many bees are lost hunting for pollen when none is available close by.

"THE PRUNES THAT MY BEES WOULD MAKE FOR HIM"

(Photo by John R. Douglass)

If the bees demand removal from the cellar before pollen is available, keep them busy carrying in rye flour from a warm nook in the edge of the bee-yard. In another nook, provide good clean water. Don't let them fly far away in the cold for water. Many perish on such trips. Contract entrances so only two or three bees can pass at a time.

Examine your bees the *first* warm day after removal from the cellar, and if they have not food enough to last until May 20, give them *at once* enough warm sugar syrup, or better, combs of honey saved from last year, to last till June 1. Don't be afraid to give a colony too much food; they won't dump it out of the hive or waste it.

To prevent robbing keep all entrances very small, and don't spill any sugar syrup or honey outside of any hive anywhere. If robber bees pounce into a hive when it is opened, close it immediately and wait three-quarters of an hour, or until the bees quiet down. If a very weak, worthless colony has begun to be robbed, remove everything from the hive but one comb containing *a little* honey, contract entrance to one bee space and let the robber bees gradually take it. Usually the little honey will be robbed out and the robbers will be satisfied. If the whole hive being robbed is removed, the robbers may attack in force the next adjacent colony.

Protect your bees from bad weather until about May 15 or 20, by wrapping each hive closely with several thicknesses of heavy wrapping or building paper or tar paper, leaving the entrance open. When bees are used to the protection afforded by the cellar from the cold and wind; they do not "build up" readily. Their "overcoats" are removed and the larger percent of the population, made up of already old bees, cannot withstand sudden temperature changes and spring winds and storms. If you cannot protect all of your colonies, *try it* on every other colony in your bee-yard. See if it pays in honey returns.

Queenless colonies should be united with good colonies by placing them above the good colonies with a thickness of newspaper between and protecting the entire two stories with paper. The second story may be removed in four or five days. Keep the colony protected. A small number of colonies, well cared for in the spring, will usually bring more honey returns with less work than a large number with little or no care.

April beekeeping problems will probably vanish if good laying queens and proper food are supplied in the fall, if the bees are wintered in a good cellar and have sufficient protection to May 20.

University Farm, St. Paul, Minn.

Honeybees and Spraying

BY T. J. TALBERT.

MANY fruit growers and beekeepers believe that fruit trees sprayed with arsenical poisons are apt to poison honeybees. Some farmers go so far as to make the statement that entire colonies of bees are destroyed by the poisonous sprays applied in the orchards during the summer.

Careful experiments and observations extending over a series of years have shown conclusively that if the spraying is done at the right time but little if any harm will be done to honeybees. The so-called calyx spray or the application made immediately after the blossoms fall is the one to which most injury is attributed.

The calyx spray should not be made until the petals or blossoms begin to fall. If the application is made earlier than this it is not an effective spray against the codling moth and apple scab, the two most important pests to be controlled at this time.

Before the blossoms fall the reproductive organs of the flower (stamens and pistil) fill and almost close the calyx cup, thus preventing the poison from reaching the place where the majority of the codling moth worms take their first meal. At this time the little green calyx lobes are turned down in such a way that it is very difficult to coat them with the spraying solution and consequently the small developing apples are not protected well against apple scab.

Spraying apple trees when they are in full bloom is also apt to prevent a satisfactory set of fruit. The spraying solution may be strong enough to burn and destroy the reproductive organs of the flowers.

By the time the petals begin to fall, when the spraying should begin, practically all the nectar has dried up and the bees are not visiting the flowers. No injury can therefore be done to the bees if the sprays are applied immediately after the petals fall.

The sprays made in the orchard have a repelling effect upon the bees. That is, the strong sulphur smell tends to drive the bees from the trees. The liquid is very distasteful to them. There are, therefore, many reasons for not spraying when the trees are in full bloom, while there is not a single good reason for spraying at the time when the spraying may be dangerous to honey bees.

Columbia, Mo.

[We consider it very important to use some repellent in the sprays, for even if the spraying be done after the bloom has fallen there is a possibility of some of it falling on blossoms beneath the trees and poisoning the bees in that manner. There need be no clash between the beekeepers and the horticulturists on this matter since the bees are necessary for the thorough fertilization of the bloom. Their interests are identical.—EDITOR.]

Beekeeping in Carniola

BY FRANK ROJINA.

NEARLY three years ago I left Carniola, a State in Austria of 3886 square miles, with 525,000 population, to study American beekeeping at the University State Farm, under the supervision of Prof. Francis Jager. Carniola is a country with mountains rising to a height of 12,000 feet, the sides of which are covered with fir and deciduous leaf-bearing trees. For over 300 years the inhabitants (Slovenes or Slavs) have given many thousands of colonies, honey and wax as payment for taxes. From that we can see how educated were our grandfathers, by steady work with the Carniolan bees. In 1769, Empress Maria Teresa, of Austria-Hungary, took up bee-culture and appointed a Carniolan, Anton Jansa, professor of beekeeping in Vienna, making an appropriation of $600 a year that he might spend his entire time with the bees.

Jansa lectured at the public gardens in Vienna, also traveling around as an extension man, giving methods of beekeeping as practiced in his native State. It was something new to the people of Vienna to see a Carniolan hive, as they were using only straw hives. The Vienna township had used his methods and hives only three years when the production of honey and wax in two months' time was valued at $10,500 as against $2000 or $3000 before.

Jansa, himself, when he started in 1770 had only 16 colonies, and in two years' time increased his apiary to 300 colonies. During this time he discovered parthenogenesis and what we call the McEvoy foulbrood treatment, writing many articles for publication of this discovery. Not until a long time afterwards did the professors and people of Vienna believe in him. He discovered the drone was the male bee, fertilizing the queen while on the wing, and also that an unfertilized queen is no better than an ordinary worker-bee, laying only drones, while the fertilized queen lays two kinds of eggs in all the cells, unfertilized in the drone-cells and the fertilized in the worker-cells.

Jansa published a book entitled "Swarming," which was of great benefit. Later, his second book, nearly completed at his death, was published by one of his students. It is entitled, "Complete Information on Beekeeping."

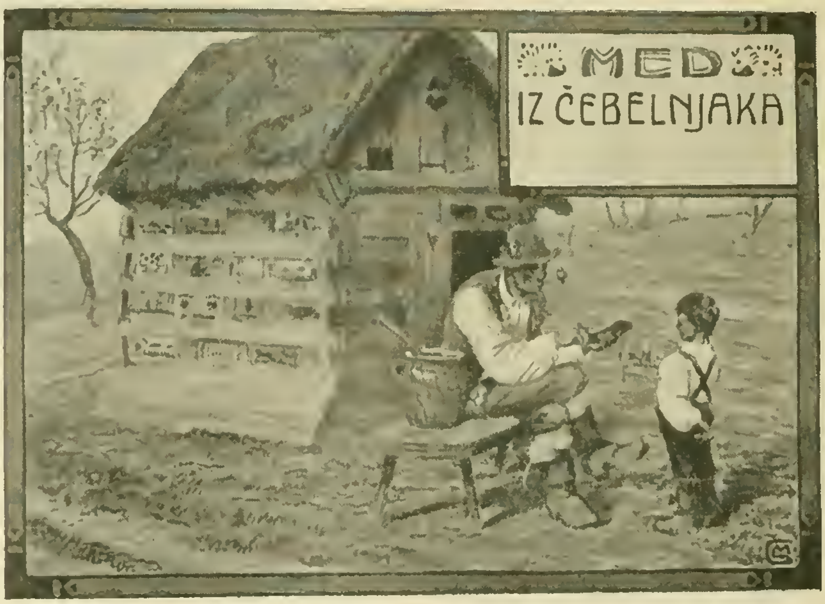
It is too bad that Anton Jansa is not known among the American beekeepers. The Austrian beekeepers call him the first and Dzierzon the second great man in bee history.

All the beekeepers in Carniola have bee-houses, about 60x20 feet, and about 12 feet high, built of logs with brick foundations, the home of their bees for summer and winter. For the winter months these houses are provided with curtains made of straw mats which roll down on the outside, making the bee-houses wind and snow proof. There is very little packing done inside the bee-house, which is kept at an even temperature of about 50 degrees.

The principal hives in use are the Carniolan, measuring about 1600 cubic inches, with movable frames. There are a few box-hives. Many improved hives are used for experiments. These are the Vienna, Bohemian, all kinds of German, and a few American hives.

The principal honey flowers are the red buckwheat, which gives nectar only in the morning; red, white, blue, and yellow clovers, basswood, dandelion, which gives only pollen, blueberries, wild and common chestnut, which produce very dark honey, and many others. A pure Carniolan colony with a young queen may harvest in a year from 200 to 300 pounds of honey.

The extracted honey is put into bottles, pails, and small barrels and is sold at an average of 30 cents a pound. Some is sold in the combs, but the extracted honey brings a better price as it is used a great deal in cooking.



MODEL OF HONEY LABEL USED BY CARNIOLAN BEEKEEPERS

Since the outbreak of the war, I hear from home that honey sells for $2.00 per pound. Clean wax is made into cakes selling at about 53 cents a pound and is used in making candles for the churches. A colony of bees sells for about $4.00.

The Carniolan bee is in color silver or light gray. It is a little larger than the Italian, and is very gentle. Carniolan bees are very prolific, are good honey gatherers, and do not propolize as much as other bees. They cap their honey clean and white and are good resisters against moths and disease.

Carniola has a Beekeepers' Association which meets yearly and there are many subordinate associations, one for each township, which meet every Saturday. There are about 900 members in the head association. All the advertising matter is published in their monthly magazine, "The Carniola Beekeeper," the editor of which is Francis Rojina, my father. The estimated number of colonies in Carniola for the year 1910, was over 53,000; in all Austria over 2,000,000, with a product of more than $9,000,000.

From earliest boyhood I watched and helped my father with his apiary of 500 colonies, and he took me on many of his lecture trips and to the National Bee Association meetings. The happiest days were those with father on his trips into the deep woods on the mountain sides where he visited and bought the purest Carniolan bees. The best queens were carried home in small cages that were strapped to our backs.

To me the Carniolan bees are the best. The only fault the American beekeepers have to find with them is their swarming, and this is caused by using too small hives. As soon as they are transferred to hives that can be enlarged, giving the queen room to satisfy her breeding capacity, she loses her inclination for swarming without losing her prolificness.

University Farm, St. Paul, Minn.

The Advantages of Full Sheets and Bottom Starters in Sections

BY G. C. GREINER.

MANY years ago, when the use of foundation in sections was becoming more and more general, and our more experienced beekeepers began to advocate its use as a means of insuring increased surplus yield, whereby the honey industry would be materially advanced, I could not see it in that light. I did not doubt that the yield of surplus could be increased by the liberal use of foundation, but I feared that its unrestricted use in sections, on account of its "backbone feature," would eventually have a detrimental effect on the honey market.

To produce a first-class article of table honey, I imagined bees had to manufacture it themselves from the start, and to retain my reputation of furnishing my customers the best that could be got I used foundation for many years very sparingly, not more than one-inch starters, or perhaps 1½ inches at the most. I do not remember the exact circumstances that impressed that idea upon my mind, but I think my experience during those early days, when comparing naturally built combs with those built on foundation, seemed to decide in favor of the former. At all events that notion, and from my present view point I can call it nothing else, has cost me tons of honey during the past decades.

As time passed on, super foundation, thin and extra thin, continued being advertised right along; our most prominent beekeepers advocated its use year after year, and as much as I watched the effects on the honey market, I did not hear of any serious harm being done by its use. On the contrary, its advantages of producing heavier yields became more and more recognized by the progressive beekeeper.

At last, having the success of others daily before my eyes, I decided to set aside my prejudice and adopt the use of foundation in sections as part of my management. But I still believed that the quality of honey would deteriorate in the same proportion as the amount of foundation increased. For a number of years I increased my one-inch starters to two inches, and as I could see no bad effects by the change, but thought I could notice a slight gain in the yield of surplus, I launched out on the use of full sheets in sections.

Since I have inaugurated my method of doubling the yield of surplus honey and control swarming, I am trying in every way to give my bees all possible advantage for uninterrupted super work. Full sheets in the sections are a great help; no beekeeper can afford to produce comb honey (or extracted, either) without them; but they do not go far enough. To make a complete job of our work, we must add bottom starters in all our sections. Under certain conditions they do not add materially to the yield, at least not so that it can be readily noticed, but they are the means of having all combs solidly attached to the bottom, and that has more to do with safe shipping than being attached to the sides.

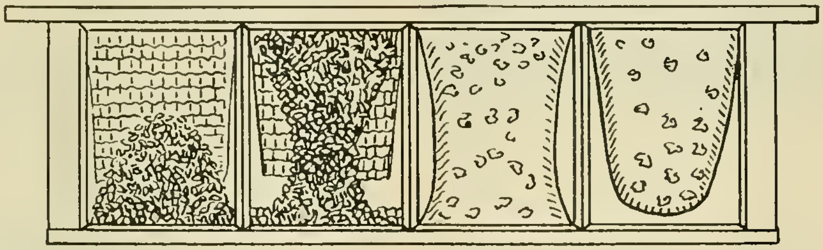


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

MANNER IN WHICH BEES CLUSTER WHILE DRAWING OUT FOUNDATION IN SECTIONS

Some of our beekeeping friends do not consider bottom starters of sufficient benefit to pay for the time and labor it requires to install them, but I consider them a paying investment. During the season of 1912, when I used them the first time systematically, I watched them very closely when the white clover flow began. After nearly all colonies had taken possession of their sections, I found one in particular where no bees could be seen from above. It being one of my better colonies, or as good as any, I was somewhat surprised at their backwardness, and to ascertain the cause, if possible, I drew out one of their center broad frames. I was still more surprised to find them as shown by Fig. 1 of the accompanying drawing. They had begun to work from the bottom starter upwards, and had reached about half way towards the top.

Examining frames from other supers, I found them in endless variations as indicated by Fig. 2; they were working from both ends of the sections at the same time. I cannot positively say that bottom starters alone made all this difference, but it indicates very forcibly that they are a great help to the comb-honey producer.

Later on, when I gathered up the last supers at and after the end of the honey flow, I found all sections, even the lightest, that had been supplied with bottom-starters, invariably like Fig. 3, while others, where for experimental purposes no bottom-starters had been provided, were like Fig. 4. If there were no gain in regard to heavier yield, the difference between Fig. 3 and Fig. 4 alone would amply pay the beekeeper for time and labor to install bottom-starters.

As an illustration of how easily we are led astray or deceived by wrong impressions, I will relate a little incident that transpired last summer.

When preparing my section supers for the campaign, I accidentally over looked inserting two sections into one of the broad frames. The space thus left was built out by the bees. Although there was no guide, from all appearance they did a model job, except that it was drone-comb. It being all natural, new comb, I expected that it would be far superior to the general grade of our section honey made on foundation, and to enjoy the treat, I reserved it for our own table. But imagine our surprise. Instead of finding a nice brittle article that would melt in the mouth, we found a tough sticky mess, every mouthful a fair sample of the toughest chewing gum taken from the penny-in-the-slot machine. It reminded me of our transferring days in the seventies, when we used to cut choice (?) pieces from veteran box-hives combs and considered them "delicious morsels."

This little episode removed the last vestige of the prejudice I still harbored and converted me into a thoroughly convinced full sheet and bottom-starter advocate.

La Salle, N. Y.

Points on Queen Mailing

BY GRANT ANDERSON.

IN the queen business the first point to consider is the rearing of good, well developed queens. It is not necessary to have them extra large to be well developed and vigorous. A queen that is not strong will not stand a long journey in the mails.

The second point to consider is the cage. Just any old thing will not do. If the distance is short the small Benton cage will answer the purpose very well, but if the distance is so great as to take several days to deliver the queens, a larger cage should be used.

Seventy-five percent of the queens that I mail go in the large six-hole cages. These six-hole cages are not export cages, but will deliver the queens in any part of the United States, Canada, Cuba, and Jamaica. For export cages I have an eight-hole cage. The blocks are nearly 6 inches long, 2¼ inches wide and one inch deep. The holes are an inch in diameter. Two holes at each end are filled with candy and the bees occupy the four central holes. The queen and escorts are put in through a small hole in the side. After the screen is tacked on, a thin bar of wood is placed across the cage at each end and in the middle, and over these three bars is nailed a thin wood cover. The six-hole long distance cage as well as the three-hole cage has a groove in each edge the entire length of the cage; and a saw kerf from this groove into the queen compartment furnishes ventilation.

Cages of Different Sizes for Mailing Queens

Next, but not last, is the candy. The success or failure of the delivery depends very much on the quality of the candy. This must be made of the best powered sugar and well ripened honey of good quality. Make a stiff dough of the candy and let it set several hours and then work it over again. If too thin, knead in more sugar, but don't make it too dry. No water is needed in the cages if the candy is made right. Never heat the candy in making.

Last, and very important, are the escort bees; for long distance or for export the escorts should be selected with great care; for short distance most any bees will do, but I prefer the young bees at all times. Young worker bees that have had a flight and are ready for the field will be best for escorts; old bees will be most likely to die in the cages and cause the loss of the queen. The number of bees for the escorts will have to be determined by the weather. If cool, use many; if warm, use few.

Rio Hondo, Tex.

Bee Hunting

IF we are to consider the hunting of bee-trees from the angle of profit alone, probably there is no room for an article on this subject in the columns of a bee-paper. But we must all have some sport or relaxation, and the old bee hunters tell us that there is nothing more fascinating than the hunting of such trees.

Very few sections are so thickly settled but that the reader may find one or more trees in the adjacent timbers by a careful search, while there are still localities where the trees are so numerous as to have considerable wild bee population.

THE USUAL OUTFIT.

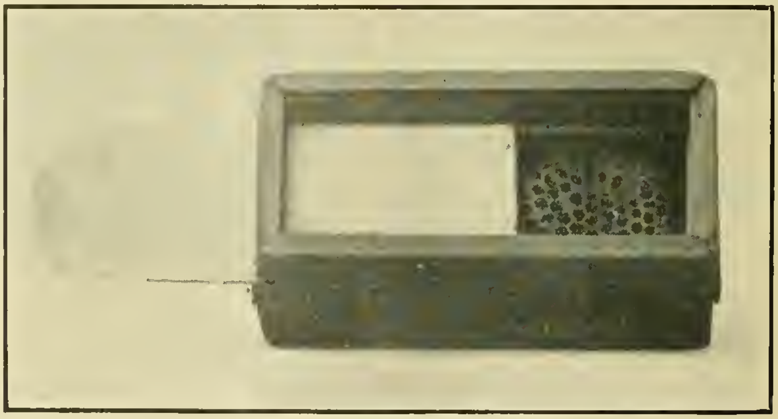
Bee-trees may be found by locating bees on flowers or at their watering places, and following them by "lining" to their home. The usual manner, however, is to be prepared with a bee-hunting box, a small piece of honey-comb, some anise oil, a little feed or bait (honey or sugar and water made thin enough to resemble nectar), a keen sense of observation and good eyesight.

THE BOX.

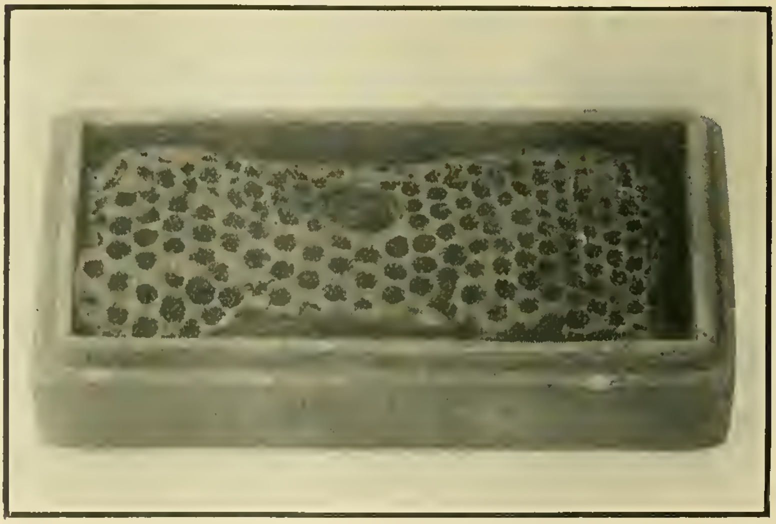
The one illustrated has been used by an old bee-hunter of Pennsylvania, W. H. McWilliams, who has located several hundred trees by the aid of it. It is an heirloom. The box is made in two parts; the lower part holds the comb with bait as in Fig. 1, and the upper part, fitting snugly over the lower, has on its lower edge grooves in which a cardboard is slid when desired, so that the bees may be separated from the bait below, or they may be caught in the upper box and then released to feed on the comb afterward. At the extreme top of the box is a glass, both to facilitate catching the bees on flowers and to give the hunter a means of observing the bees on the bait.

WHEN TO START AND HOW.

Naturally bees are not apt to "decoy" best when there is nectar in the field. Every beekeeper knows that during a honey flow bees will ignore honey spilled here and there on the hives. They prefer the nectar from the flowers. So, in hunting bees in the woods, choose a time of honey dearth if possible. Early spring is best if you are after the bees alone. Late summer



A BEE HUNTING BOX



BEE HUNTING BOX WITH BAIT EXPOSED

and fall should be chosen if you wish to get the honey and are not so particular about the bees. Choose a location, of course, at considerable distance from any apiary and near woods where bee-trees are most probable.

GETTING THE FIRST START.

If possible, a bee is caught who is seeking early pollen or getting a load of water at some watering hole. The glass lid is placed over her; she flies up against it, the box is put together and she is a captive. Many old bee-hunters if unable to find bees otherwise will decoy them by burning honey and old comb to attract them.

After the bee is caught, the box is made dark to induce her to take of the feed, and while she is feeding the cover is carefully removed so as not to frighten her.

GETTING THE LINE.

As soon as she is filled, the bee will take flight, going first in circles very similar to those of a young bee except that they are elliptical with a gradual trend in the direction of her home.

At the first flight, the direction may be hard to get, but the bee will not be long in returning with re-inforcements and a line will soon be established so that the direction will easily be recognized.

HOW FAR YOUR TREE IS.

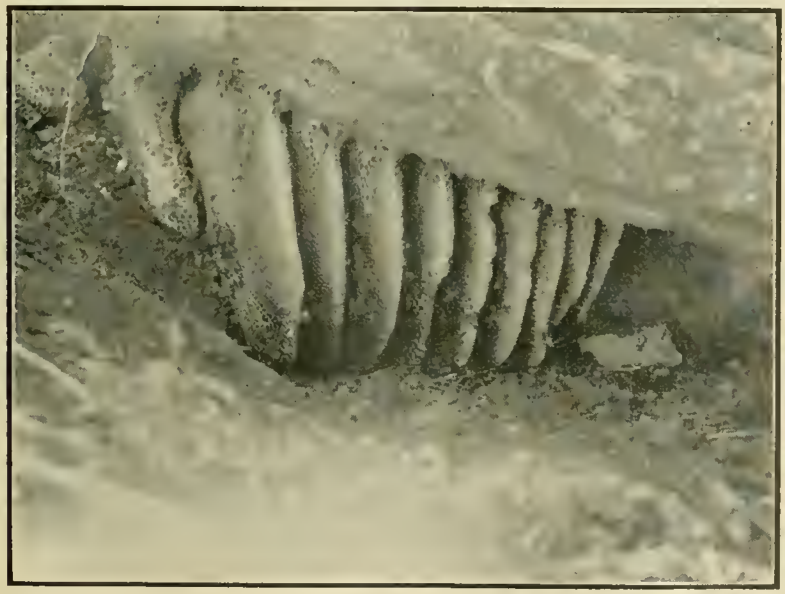
Mark one of your bees with flour, crayon or paint on abdomen just before she leaves the bait for home. If she is gone seven or eight minutes, the tree is a mile away. Each additional mile will take from five to six minutes.

CHANGING LOCATION.

When the line of bees has been well established and the approximate distance ascertained, it is an easy matter for the bee-hunter to move in the direction of the tree, leaving a little of his bait at the original location to keep the line constant. Always keep on the winward side of the direct line when moving towards the tree, then in case you lose the line more bees can easily be attracted to the bait. If the line is well established and is kept going by frequent stops to bait more bees, it will in most instances be easy to locate the tree.

The bee-hunter, new at the game, will many times, however, move too far at a time and may go past the tree. This can readily be told by the lessening of the number of bees working on his bait box, and also by the fact that the few he does get will go in the opposite direction.

Sometimes it is found expedient to "cross line"; that is, to establish another line to the same tree, starting with a few bees carried away in the box to another location. In most instances, however, this need not be resorted to.



A WILD BEE CAVE ON DANCER MOUNTAIN AT LLANO, TEX.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Putting Full Sheets in Frames

What is the best way, to put in full sheets of foundation to prevent them being torn down when a swarm is hived upon them?

Would you recommend painting them with wax?

I have had so much trouble this way that I rarely use full sheets, but hive swarms on starters and get too much drone-comb. Hannah R. Sewall.

Forest Glen, Md.

It would be easier to advise if particulars had been given as to the way the foundation had been fastened, and then just what trouble occurred. In the first place, foundation should never be given to a swarm without being well fastened in the frame. If fastened to the top-bar by means of saw-kerf and wedge, the wedge should not be lightly pushed in, but crowded in tightly its full depth. If rather light foundation be used, it may pull out even with the wedge in full depth. In that case the edge of the foundation that is pushed into the kerf may be doubled, or a thin strip of wood such as a piece of wooden separator may be crowded in beside the foundation. Instead of the kerf-and-wedge plan, the foundation may be fastened to the top-bar by means of melted wax (or rosin and wax, half and half), and some use the wax in addition to the wedge.

No matter how firmly fastened to the top-bar, no foundation will withstand a swarm without being supported by wires or foundation-splints, and these should be well imbedded into the foundation. If they be pressed in when too cold, the bees may try to gnaw them out. The work should be done in a warm room or on a warm day. Electricity is perhaps the best thing to heat the wire when embedding it, but you can get along without it. Having your frame wired and the foundation well fastened to the top-bar, turn the frame flat, wires down, and hold it over the burner of a gas or oil-stove. While holding the frame with one hand, press down with a finger of the other hand upon the foundation directly over the heat, moving the frame slowly the length of the wire, and letting the finger slide along on the foundation. The wire heats quickly, and melts its way in while the rest of the foundation is still cool. A little practice will teach you how slowly to move.

If all this is well done, there should be no trouble about foundation falling down. Still, in the middle of a swarm is a hot place where the foundation may break down, and you will do well to have the hive well ventilated for a few days, with the cover raised half an inch or more.

If you care to take the trouble, you can have the foundation fastened into the frame in advance. Give a frame of foundation to a colony, either in the brood-chamber or in the extracting super, at a time when honey is coming in well, and the bees will fasten the foundation so there will be no danger that a swarm will break it down. It may take a day, or it may take three days. Here is one way to have a full set fastened. Go to a strong colony, and put half the brood-combs into an upper story. Have the brood-combs of the two stories alternated with frames of foundation, and in two days, more or less, the foundation will be well fastened and may be taken away. Of course, this cannot be done in a cool time, lest the brood be chilled.

Some succeed well by painting with wax the upper part of sheet.

May Disease

Last spring I sent to New York for a colony of bees, and they arrived on April 17, in what I thought was good condition. In May I was compelled to move them 1½ miles. The weather was cool, and as the distance was short I put on an empty super and closed the entrance. However, there were quite a few bees dead when I released them, although they were not confined longer than an hour. Shortly after that they seemed to have a sort of May disease; they looked greasy and had large abdomens. I lost about half of the colony, but the disease finally disappeared. They were late in swarming, and as my queen was clipped, I intended to let the bees swarm but once. I hived the swarm in a new hive on the old stand, placing the old hive close beside it, thinking to move it in seven days to a new stand.

Swarm No. 1 came out on Thursday afternoon, and on Saturday morning swarm No. 2 came out. I hived this swarm in a new hive and placed the old hive back. The same hive had a third swarm three days later, but this time I cut out all queen-cells and returned the swarm with the virgin queen to the parent hive. They did all right for a while, then one morning I saw swarm No. 2 was excited about something. After a search I found their queen under the alighting-board which was slightly raised at one end. She appeared cold, and after warming her up she seemed spry again, but refused to enter the hive, although the bees were willing to accept her. I gave her some smoke and she went in, but soon came out again and wandered off on the gound, so I killed her and united swarms No. 1 and No. 2.

On Aug. 18 I moved to Mukwonago, and had to move the bees, and as they had their brood-chamber filled with brood and honey, I thought I would have bad luck in moving. I have the Langstroth hives, and took off the cover and bee-board, leaving an empty super over the brood-chamber, closed the entrance with a screen and tied cheese-cloth over the super. We loaded them and started off at 3:00 o'clock in the morning, getting there by 5:00. We released them at once after giving them a little smoke, and we did not lose a bee nor a drop of honey.

Number I and 2 stored about 25 pounds of honey in the super and raised an immense swarm of bees. The old colony did not store any and they are lighter in bees than the other hives, and before cellaring them I noticed some of the bees had a greasy look and quite a few died, and now in the cellar they have died off twice as much as the other colonies.

1. Why did the afterswarm come out so soon after the prime swarm?

2. Do you think it is bee-paralysis my bees have, and will it again appear in the spring? Is it a disease that is in the hive, and should the old hive be destroyed?

3. Does an old queen rear larger swarms than a young one?

4. Do you think my bees were lazy or sick that they did not work? There were lots of sweet clover, goldenrod and dandelions to gather from. Will they do better next summer?

5. Should I requeen or should I unite the two swarms in the hive with the old queen? The young queen has nice bees, all 3-banded and of good color. Do you think it would pay me to try her again, the old queen was a tested Italian? [Mrs.] C. White.

Mukwonago, Wis.

1. It is possible that when No. 1 was ready to swarm the weather was too bad, being cold and rainy, and this continued until the swarm came out about six days later than it could have done if the weather had been good, making it only two days longer until the first virgin was ready to go with the second swarm. A delay of that kind often happens, but it is rare that the delay is so long. So rare that another explanation is probable. The first swarm occurred on Thursday. On Wednesday or Thursday of the preceding week, it may be that a swarm, unnoticed by you, issued, and that the old queen was unable to go with the swarm, or was in some way lost, and the swarm returned. Then when the oldest virgin was ready, the swarm which you saw issued, and two days later the second of the young queens issued with another swarm.

2. As you describe it, it is pretty sure to be paralysis. It may appear again, but likely not. The hive is all right.

3. If you mean does a 2-year old queen have a larger swarm than a 1-year old queen, no. If you mean does the old queen that issues with the prime swarm have a larger swarm than the young queen that issues with the second swarm, yes.

4. Hard to tell. Possibly both. If there is no paralysis this year, they are likely to do better, provided it is a good year.

5. It would hardly be advisable to unite the two colonies. As the swarm was late the young queen didn't have the best chance, and may do better this year.

MISCELLANEOUS NEWS ITEMS

Prune Pollination.—Bulletin No. 274, of the California Agricultural Experiment Station has for its title, "The Common Honeybee as an Agent in Prune Pollination." It is written by A. H. Hendrickson.

It appears that insects are extremely scarce in the Santa Clara Valley at the time that the prune trees are in bloom, with the result that the crop is not so large as it might otherwise be.

Experiments were conducted with trees entirely protected from bees and other insects by netting, and with others having adjacent to them plenty of honeybees. The results were as usual; the bees' proximity resulted in a much larger set of prunes, especially with the French variety.

The best results will probably be obtained by bringing in bees from outside and scattering them about the orchard with at least one colony to each acre.

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Nougat.—Three cups of granulated sugar, 1½ cups of any kind of nut meats (preferably English walnuts), ⅔ cup of honey, ⅔ cup of hot water, and the white of one egg beaten stiff.

Boil the sugar, honey and water together until they make a rather hard ball when dropped in cold water. Remove from the fire, pour in the beaten white of the egg and beat briskly with a silver fork. After beating a while, pour in the nut meats and continue to beat until it begins to make a hard creamy mass, then pour into a buttered

L. B. SMITH, OF TEXAS, GOT HIS START IN BEEKEEPING BY HUNTING BEE-TREES tin or platter to cool.

No better, more wholesome or delicately flavored candy is obtainable at any price. Try it.

ORELL L. HERSHISER.

The 47th Annual Convention of the National.—The National Beekeepers' Association was held in Madison, Wis., Feb. 6, 7 and 8. Owing to a severe storm and blockade north and east, very few members were present, about 70 in all.

The program opened in the afternoon on Tuesday with a "rouser" by N. E. France, in his address of welcome. President Francis Jager followed with the annual address. In the past year the National has obtained an appropriation (from the government) of $5000, for educational and extension work, and has obliterated the factional lines, thus paving way for future work. The future work should be on a broad scale, embracing all big activities of the National in separate sections under able chairmanship.

Doctor L. D. Leonard, of Minneapolis, Minn., spoke on the "Forks in the Road," metaphorically describing the wanderings of the National. He advised for future travel to organize three sections, the educational, the industrial and the legislative, with more to come as need arises.

The big discussion of the day followed an address by Dr. S. A. Jones, of the Bureau of Crop Estimates of Washington, D. C. Doctor Jones absolutely proved the correctness of the government honey crop estimates. To give a widespread benefit to beekeepers of the country, he remained another day to confer with a committee on a plan of cooperation between the National and the government office. The result of this conference was that henceforth the retail and wholesale price of comb and extracted honey will be asked and given out by the government to those who send in reports and to the officers of the National who will thus be able within a fraction to determine what the *real* price of honey ought to be at retail and wholesale.

Prof. Taylor, of the University of Wisconsin in Government office, spoke on accounting and cost and profit. The National has appointed a committee to cooperate with Prof. Taylor and the Government office of Accounting in order to get up a system of bee bookkeeping for larger producers. The National will probably be able to furnish this business book to its members free of charge as soon as completed.

None of the speakers for Wednesday were present. Dr. E. F. Phillips took up his paper on State and Government Aid in Educational and Research work. He first pointed out the necessity of such work, not in making more beekeepers, but better ones of those existing, calling attention to gross ignorance of bees and beekeeping methods even among the biggest men in the industry. "Some one suggested just now", he said "that there are among the members of the National some who do not know how to hive a prime swarm." The plan of the Government is to extend education to every State in the Union. North Carolina and Tennessee received one educator each last year on behalf of the National Beekeepers' Association, and the work these men are doing is as wonderful as the appreciation and cooperation of the people of these two States.

A lively discussion followed, and when the atmosphere cleared this was the result:

1. That the National go on record favoring further extension of educational and research work.

2. That this section of the activities of the National be put into a special section with a secretary in charge under the executive committee.

Dr. E. F. Phillips, of Washington, D. C., was chosen to act as secretary of this educational section.

A pleasant divergence was the banquet or dinner held at 12, noon, at Park Hotel. Sixty-two were present. Prof. Francis Jager acted as toast-master, and about a dozen good and funny talks were given, mostly by members from other States.

At 3 p.m., Colorado had its inning. Mr. Wesley Foster, of Boulder, Colo., spoke on Cooperation in Distribution of Honey, also on Imports and Exports, and Mr. H. Rauchfuss, of Denver, on the Colorado system of handling honey. Both papers were enthusiastically received, showing that the industrial part of the bee is nowadays uppermost in the people's mind. After a long debate and discussion a special section of the National was organized under the name of industrial section, with Mr. H. Polhemus, of Colorado, as secretary, to study national methods of cooperation and report next year. Mr. Frank C. Pellett, of Atlantic, Iowa, was appointed secretary of the legislative section.

Mr. C. P. Dadant spoke on State Fair and exhibits, but he widened out into a general boost for progress, which, from a man of his standing, will be a great asset for the National. Thanks

After supper the question of the National Central office was discussed by Prof. Eric F. Millen, of Ames, Iowa. The paper was so interesting that a discussion followed, after which the five points brought out by Mr. Millen, were unanimously adopted.

Hamlin B. Miller, of Marshalltown, Iowa, closed the program at 9:30 p.m., and if anybody was drowsy by that time they were soon wide awake and stayed wide awake whilst he spilled his "Pep" on "How to increase the membership of the National.";

At the business session Thursday morning a resolution to stand by President Wilson was adopted and wired to Washington.

Other resolutions adopted, were, to refer the great questions brought up at this meeting to committees to work them out and report at the next meeting;

To print our own convention report as well as any other reports during the year and send it to members;

To procure money for such printing by every member present pledging himself to secure five new members for the National;

To appoint in the most promising States a representative or secretary to take care of the interests of the National in that State. The president was authorized to appoint such men.

The nominating committee consisting of Messrs. C. P. Dadant, E. F. Phillips, and Wesley Foster, reported that they recommend as officers for the next year Prof. Francis Jager, of Minnesota, for President; Mr. J. Bull, of Illinois, for Secretary, and H. Polhemus, of Colorado for Vice-president. They were elected by acclamation, whereupon the meeting adjourned.

The meeting was permeated from beginning to the end by a spirit of encouragement, hope and good cheer, characteristically expressed in a message received from Dr. C. C. Miller.

FRANCIS JAGER, *Pres.*

John Vandervort, whose death was announced in our March number, was born in Schoharie county, N. Y., Jan. 6, 1832, and at the age of 12 years, with his parents, went to live at Laceyville, Pa. He remained in the family home until 1853, when he was united in marriage with Miss Harriet Montgomery, of Silvara, a year later going to Marengo, Ill., where he spent about 15 years.

In 1869, Mr. Vandervort returned East, locating in Binghamton, and three years later permanently settled in Laceyville. At this time he formed a partnership with his son A. L., going into the planing mill business for the manufacture of beehives, the son taking charge of the milling end while the father devoted his time to bees, which in the following years proved a very successful venture. The partnership of father and son continued about three years, and in the dissolution the son took the milling business while the bee industry was continued by the father.

THE LATE J. VANDERVORT

While in Binghamton, Mr. Vandervort was for a time in partnership with Jones, who "pays the freight."

Mr. Vandervort was the first manufacturer of comb-foundation cylinders to make mills of different cell walls for the different grades of foundation. The first machines made by Washburne under the direction and management of A. I. Root, were very accurate, but no attempt was made by him at first to make cell walls of different depth and thickness, or at least only one grade was put on the market. Mrs. Frances Dunham, of Depere, Wis., about 1880, put upon the market mills with a rounded cell which gave very satisfactory foundation. But this was a very heavy grade, as it was difficult to manufacture anything lighter than five square feet to the pound with her mills. Vandervort, who was a fine machinist, at the suggestion of the writer made mills with walls of different thicknesses and different depths. It was with his mills that the first separate grades of brood and super foundation were secured.

Vandervort was as warm hearted and generous as he was skilled in his profession. We used his mills for years, and I visited him in 1884, to suggest some improvements in his methods. He had a little shop about 12 by 12 feet, and in the midst of his skilled work, which required a great deal of attention, he would find occasion to help his neighbors. I remember his stopping from his work on a mill to repair a tool for a neighbor blacksmith, free of charge. He cared little for money, and I have before my eyes a letter from him, dated Sept. 2, 1884, in which he writes: "You sent me nearly $50 more than belongs to me, and for this I shall try to get even with you some future day." We never could get him to send us a bill for the numerous mills that he manufactured or repaired for us, and one of his favorite sayings was: "What a grand country America would be if it would only forget the Almighty Dollar."

Mr. Vandervort was thrice married, and of the first marriage in 1853, there survive two children, Mrs. Carrie Darrow, of Reading, Pa., and A. L. Vandervort, of Laceyville. In June, 1875, he was married to Emily Jane Fish, of Silvara, and of this union there survives one daughter, Mrs. Frank Creasy, of Berwick, Pa., and in 1890 he was united in marriage to Mrs. Ella Brown, of Golden Hill, who also survives.

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Rhode Island Association.—The Rhode Island beekeepers organized a society at Providence Feb. 21. The outlook ahead seems very encouraging in power of members. The society is to meet frequently, place of meeting will probably be the Lecture Room of the Providence Public Library.

It is the intention of the society that any one interested in beekeeping shall not be overlooked. This is the only society in the State, and any one interested is cordially invited to become a member. Communicate with the President, Arthur C. Miller at the Providence Institution for Savings or the Secretary, Gardner B. Willis at the Providence Technical High School.

GARDNER B. WILLIS, *Sec.*

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Putting Dummies Between Brood Combs

1. I am getting to think that old brood-comb is much of an abomination and should unconcernedly be turned into wax. In order then to make good what is thus lost, what ways are there co-incident with regular honey production and with minimum sacrifice thereof, to get full foundation in brood-frames drawn out in maximum quantity so far as aforesaid not detrimental to honey production?

2. I am an opponent of the divisible brood-chamber; yet it seems that some offer a superior way for contraction, and thus sending bees up into the sections by confining the bees to one part of the brood-chamber. How can one approach this nearest when using 10-frame full depth Langstroth hives? Of course, by using dummies. Now according to Dadant, bees neglect sections that are not over frames. What would then be the best arrangement of frames of brood and dummies in such 10-frame hive, if there were therein four or five dummies per hive?

PENNSYLVANIA.

ANSWERS.—1. The best scheme for getting combs drawn out depends somewhat on circumstances. With natural swarming, or even with shake-swarming, probably the best time is to give the frames of foundation at the time of hiving or shaking the swarm. In other cases a good way is to have combs drawn out in a super.

There may be some peculiarity in your case that makes old combs objectionable, but did you never notice that when bees are given their choice they prefer old combs to new? I have been keeping bees more than half a century, and I've never yet turned down a comb because of old age.

2. The Dadant opinion is entirely correct. Put four or five dummies in one side of the brood-chamber, and the sections over the brood will be finished while the outside sections over the dummies will be hardly touched. Well, is there any other way but to put the dummies between the brood-combs? Had thought of that, hadn't you? but you thought it would hinder the queen from going from one frame to another. Well, it won't, for I have tried it. It might, if you should put the dummies in a bunch in the middle of the hive, but scatter them, with only one in a place, and it doesn't seem to hinder the queen from keeping all combs occupied. For all that, I don't believe you could coax me to try to limit the queen's room in that way.

Putting Up a Hive

Last spring I bought a lot of hives which were shipped to me knocked down. I put them together, and among the lot, for each hive, was a board ¼ inch thick, and as long and wide as the hive. This board has a hole in the center 3¾ inches long and 1¼ inch wide. The question is, where does this board fit in? Does it go on top of the brood-hive under the super or on top before the metal top is put on?

ILLINOIS.

ANSWER.—It goes on top of the brood-chamber, under the super (when there is a super on). The slotted hole may take a Porter bee-escape, and it may also serve to put a feeder over. Don't use that board during the honey crop.

Miscellaneous Questions

1. In working for comb honey, is it essential to use excluders to keep the queen from laying in the super?

2. How many colonies of bees are there in Illinois? In Canada?

3. Is it necessary to put bees in the cellar or use winter packing cases in this locality?

4. Is it essential to provide shade for bees to prevent their swarming and leaving the hives?

5. Which is better for the production of comb honey, the 8-frame hive or the 10-frame?

6. From an article in the Canadian Horticulturist and Beekeeper for July, 1916, headed, "Beekeeping in Holland," I inferred that straw skeps were used in place of the modern movable-frame hive. Has the movable frame hive ever been introduced there and disliked, or is it unknown?

7. I bought two colonies of 3-banded Italians in July, 1916. A neighbor did the same, and bought bees from the same apiary. His made a super of honey and enough stores to last them through the winter. Mine made only enough to last them through the winter. From careful watching I ascertained that mine flew in large circles about the apiary gathering very little honey when a field of white clover in full bloom was within a hundred yards. What was the matter with them?

8. What is the best method to entice bees from a hollow tree or log into hives?

9. How cold does it have to get to kill bees in winter housed in 8-frame hives with no packing cases and in the open?

10. Which method is the better in a queen-rearing apiary, the Ben G. Davis plan or J. M. Davis plan?

11. Which is the sweetest, honey, molasses or sugar?

ILLINOIS.

ANSWERS.—1. I don't use excluders under sections, as I think they are generally used. But I have sections filled with worker foundation. If you use small starters in sections it may pay you to use excluders; otherwise the queen will go up to lay in the drone-comb; the bees are sure to build in sections when only starters are present.

2. I don't know.

3. You are in latitude about 39 degrees, and will do better to winter outside.

4. It is not essential, but better for the bees, and better still for the beekeeper.

5. All things considered, the larger hive is better.

6. Holland, I think, is like some other European countries, where some use movable-comb hives, but a good many have not yet advanced so far, same as in some parts of our own country. I don't think there is a country in the world where movable combs have been rejected after fair trial.

7. One colony may have been stronger than the others, or the bees may have been better. Possibly the management may not have been the same. If the bees got nothing from the white clover, it was no doubt because the clover yielded no nectar. That happens a good many times.

8. I don't know of any way to entice them out. They must be forced out by means of smoke, carbolic acid, etc., or the tree felled and cut open.

9. That depends on many things. A colony weak enough may succumb to a temperature above freezing, if that temperature be long enough. A colony strong enough, with stores enough, will defy the mercury to get low enough to kill it.

10. Like enough the Ben G. Davis plan is better for the son, and the J. M. Davis plan for the father.

11. If you touch your tongue to each of them in succession, you will probably say honey is the sweetest. But I have never been able to find out for certain which of them would go the farthest in sweetening, say a batch of dough, although I have tried to do so.

Checking Swarming

In "Fifty Years Among the Bees" you advise, before the bees become crowded in the spring, to place a brood-chamber with empty combs under the colony to check swarming, etc. How would the plan work to substitute full sheets of foundation for empty combs?

PENNSYLVANIA.

ANSWER.—Foundation will do well. After one has been in the business some time, however, there will generally be drawn combs on hand, and they will keep better to be in the care of the bees

Weight of Sections—Foulbrood—Size of Hive

1. What should a section of honey weigh some say from 10 to 13 ounces for a pound?
2. How can you tell when bees have foulbrood? What time of the year do they get it and how can it be cured?
3. Would a hive 17 inches long and 12 inches wide be large enough for an average colony?

IOWA.

ANSWERS.—1. The Colorado rules require a section of fancy honey to weigh, with the wood, 13½ ounces; No 1, 12 ounces, and No. 2, 11 ounces.

2. Write to Dr. E. F. Phillips, Department of Agriculture, Washington, D. C, and he will send you a number of pages that will give you full information.

3. That is a little smaller than the 8-frame Langstroth, which is generally considered hardly large enough.

Flowers for Pollen

What varieties of garden flowers are best suited to furnish pollen and nectar for bees? OKLAHOMA.

ANSWER.—Mignonnette and sweet alyssum are good, but unless you plant by the acre it will not amount to much.

Swarming—Requeening

1. Will cutting out the queen-cells in the brood-chamber about every ten days during the summer prevent swarming and induce the bees to make more honey?
2. My bees are a cross between the black and yellow species. They are not very good workers, and the swarms that issue are small. I wish to change to pure Italians Do you advise the pound package of bees or requeening with Italian queens? Would the young queens be pure Italian?

QUEBEC, CANADA.

ANSWERS.—1 Killing queen-cells every ten days will delay swarming, at least for a time; in some cases it will prevent it altogether; but generally the colony will swarm sooner or later in spite of cell-killing.

2. The result will be the same whether you get a queen in a queen-cage or in a pound package, only with the queen-cage you run the risk of introducing. The young queens you rear from your new stock will be pure if they meet pure drones, otherwise not.

Increase—Swarm Prevention—Superseding

1. I have now four colonies which I hope to carry over winter. I would like to increase these to eight, preferably by the shaken swarm plan, but I am at a loss to know how to treat the old colony so that they will rear a good queen from the cells that were started before the shaking was done. But suppose they do not get the swarming fever, what then? Wouldn't it do just as well to divide the colonies sometime in May, following the plan you gave to "Pennsylvania," in answer to question No 3, page 245 of the American Bee Journal for July, 1916?
2. If I follow this plan, will that end the swarming for the year? Will they gather as much surplus as if they had been shaken instead of divided? I might watch and wait for signs of swarming until it was too late to make the increase by division.
3. If I increase by shaking, wouldn't there be a good queen reared in the old colony if I do not shake clean, but leave some of the bees on the frames?
4. My bees are in the country six miles from here, and I do not see them every day. I had but one colony last year, and this colony swarmed about the middle of May, when there was no one there to hive the swarm, and it got away. I did not know this until about four days after the swarm came out. Not knowing what to do then to prevent any afterwarms, I let matters take their own course, with the result that there were more swarms when I was not there, and all left for the woods. In spite of this I got about 40 pounds of fine honey from this colony, mostly in shallow extracting frames What would have been the proper course to pursue in order to prevent any afterwarms, when I got there about four days after the first swarm issued?
5. How do you tell when the bees are gathering honey, and when the flow ceases? It is easy with pollen but not with honey.
6. I bought two colonies last summer, and I find that some of the brood-frames are not wired. Two of the combs fell out of the frames while looking over them. I would like to replace these frames with others that are not wired. When would be the best time to do this so as not to interfere with brood-rearing? I will have to use new frames with full sheets of foundation, as I have no drawn combs.
7. How can I tell, when queen-cells are found in a hive, whether there is to be swarming or superseding?
8. If, when superseding, the bees build more than one queen-cell is there any danger of swarming?
9. I sometimes find turban-shaped enlargements of cells in the hives. Are these the beginning of queen-cells or an indication that the bees are in a swarming humor?
10. I always thought that the longer a colony was without a queen the more readily they would accept one when introduced, but after reading that editorial, "The Meanest Colony," etc., on the first page of Gleanings for July 1, 1916, I am all at sea. If I should find any of mine queenless at any time I wouldn't know what to do.
11. I can buy some 8-frame hives with supers for $1.00 each, all in good condition. Would you advise doing this or would it be better to get new *10-frame hives* at about $5.00 each?
12. If I give a queenless colony a frame of brood with larva less than three days old and they start several queen-cells, will there be any swarming, or will the first queen out destroy the other cells?
13. What will happen to a colony that has a laying worker in the fall and is left in that condition until spring?
14. How can I, as advised, use the strongest colonies or those that swarm the least, for the crop, and at the same time breed from them, so as to build up all around.

PENNSYLVANIA.

ANSWERS.—1. It will be all right *provided* the colony is strong enough in May. If not very strong then, wait until June.

2. You cannot reply upon it for an absolute certainty, but the likelihood is that there will be no swarming. It isn't necessary to wait for signs of swarming; sometimes a strong colony goes through the whole season without offering to swarm. The important thing to watch for is the proper strength.

3. When you shake and put the brood in a new hive *on a new stand*, even if you leave quite a force of bees on the combs, there will be no field bees coming into the hive for two or three or more days, hence no honey coming in, and the bees will be in a discouraged condition, in no mood to rear a good queen. You can, however, take the queen away with two frames of brood and adhering bees, putting her on a new stand, then a week later shake your swarm, leaving nearly all the bees with the queen on the old stand, and on the new stand (where the queen has been during the previous week) all the brood but one. But instead of shaking off the bees you must brush them off the combs, for the shaking would ruin the queen-cells. However, it will be all right if you leave at least one frame without shaking, provided it contains one or more good cells.

4. If the queen had whole wings, and the swarm absconded with her, and you got there four days later, you might at that time kill all cells but one You might also, on that fourth day after swarming, take all but two frames of brood with adhering bees, and put them in a new hive on a new stand, beside the old one. Then a week later, when there would no longer be any young queens left in the cells (they would have emerged or else been killed) you would return to the old hive all the brood and bees you had taken away.

5. It is hard to say for certain whether a given colony is gathering or not at a given time. But there are some things by which you may make a pretty good guess. When honey is yielding abundantly, you will see the bees flying in and darting out of the hives like mad, appearing in the greatest haste. They are likely to be much crosser when no honey is coming in. One of the best signs that the flow has ceased is to find the bees suddenly become very cross. They will also be more listless about flying in and out of the hives.

6. Notwithstanding the apparent incongruity, the best time is when the bees are most busily engaged at brood-rearing.

7. You cannot be sure about it. If you find a dozen or so of cells at a time when bees generally swarm, you may be pretty sure that the bees have thought of swarming. If you find not more than three or four after swarming is mostly over, you may guess that supersedure is intended.

8. Yes, an increased flow of honey or something else may induce the bees to swarm when otherwise there would have been superseding. Conversely, a check in the honey flow, or something else, may turn the bees from swarming to superseding.

9. They are the beginnings of queen-cells, called cell-cups; but may be found in the hive almost any time of year, having no reference to swarming.

10. Do just the same as you would have done if you never had seen that editorial, only now you know that when bees are queenless a long time they become somewhat reconciled to their queenless condition and resent the intrusion of foreign royalty. So when you find a colony queenless, generally you will move just as soon as you can to supply the deficiency.

11. All depends upon the relative value you place upon working with the two kinds, and what is to be your future course. If you intend to continue using the smaller hives, by all means take advantage of the offer at $1.00. If you expect afterward to use the larger hive, it might hardly be worth while to take the smaller as a gift.

12. That depends. If it is swarming time, and the colony strong, you may expect swarming; otherwise not.

13. The bees may be all dead by spring; if not, there will be a few of them, and it would be better if they were all dead. Only when you say *a* laying worker, you should understand that a large number of laying workers are likely to be present.

14. I am a bit puzzled to know when you were advised to use your very best queens, *always*, for the crop. When a queen has established her reputation for superiority in any given year, it's a good plan the years after that to keep her in a nucleus, so as to let her live as long as possible, without expecting her bees to help on the surplus. However, it's no trick at all to keep her in a strong colony, working its best on the harvest, and at the same time to breed from her. All you need to do is to take from her a small amount of very young brood, to be used in rearing queens in other strong colonies made queenless for a time.

To Incite Swarming

My bees do not swarm until after the commencement of the honey flow, which commences about July 10. Could I in any way cause them to swarm before that time. Here we have very little fruit bloom and some dandelions. If I can cause them to swarm before the honey flow I can get much more honey. I run for comb honey. NEBRASKA.

ANSWER.—If there is at any time a dearth of a week or more, when there is no pasturage for the bees, you might feed during that time. You might also get some of the colonies to swarm earlier by giving them sealed brood or bees from other colonies. Of course you can have recourse to artificial increase by any of the methods given in your bee-books. I am somewhat skeptical as to your getting more honey by having swarming earlier.

Bees Poisoned from Spraying

1. What size of mesh should a wire-screen be to prevent bees from feeding through it?

2. Does poison such as bees get from the sprays in orchards kill them if they carry it, or must they eat it to affect them?

3. Do working bees eat nectar or honey from the hive?

4. What time of day do they eat when there is a good flow on?

5. I would like to keep six or eight colonies in a district where there are orchards. I kept a number last summer, but the fruit spray poisoned them. Is there any way to work them so the spray will not kill them, or so they will not carry the spray? The spray is on at two different times of about three days each. I don't care to shut them up. Would they continue to go to the fruit bloom if each colony was divided into nuclei and each nucleus was fed with a stimulative feeder? WASHINGTON.

ANSWERS.—1. I don't know that screen is made with so fine a mesh that bees on one side cannot reach through to feed bees on the other side. To prevent that you can have two screens one-fourth inch or more apart.

2. I am not sure, but I suppose taking the poisoned liquid into their honey-sacs is enough to kill them.

3. Both, I think.

4. I suppose at any or all times.

5. I don't believe feeding in nuclei would prevent the bees from getting the poisoned spray.

Bees Resisting Foulbrood

1. A year or so ago J. L. Byer made the statement that a young vigorous pure-blooded Italian queen was immune from the contagion of European foulbrood. What is meant by an immune Italian queen? Are we to understand that the pure blood of the queen overcomes the germs of the disease by the law of phagocytosis?

2. If a colony of bees becomes infected with European foulbrood and the queen is caged for ten days, or a young vigorous queen is introduced at the end of ten days, and the disease disappears, in what manner or under what law would the disease be eliminated? Would it be by the police force of the bees made vigorous by being made queenless?

3. If a colony of bees die from foulbrood and the fixtures and dead bees removed, and a colony of bees, honey and brood in all stages absolutely pure placed in this diseased hive and the disease appeared again, in what way would the germs enter the larval bee?

4. Can a foulbrood germ come into existence in any other way only through the larval bee?

5. Why do good men say their bees are so vigorous and strong that they resist the foulbrood germs, and do not tell in what way they do it? PENNSYLVANIA.

ANSWERS.—1. I suppose that by an immune Italian queen is meant a queen whose progeny is immune to European foulbrood, that is, would not contract the disease; but I never saw it claimed that phagocytosis had anything to do with it.

2. I don't think any one has claimed that the colony has become more vigorous by queenlessness. I don't know that any theory has been advanced to explain how the cure takes place through queenlessness, except the one advanced by myself. Since no one to my knowledge has objected to it, and since no other theory has been advanced, it is possible that my theory may be correct. The theory is this: It is well known that when a larva is crushed, the bees promptly lick up the juices of the crushed larva. When a larva is affected by European foulbrood in a short time it dies, and then the workers will suck its juices, and then when they feed other larvæ the disease will be conveyed. But that's only for a short time; as soon as the dead larvæ becomes decayed and unpalatable, the nurses will have none of it. Suppose now the queen be caged, killed, or removed. In about eight days all the brood will be sealed, and there will no longer be any chance for the nurses to eat diseased juices. Indeed, they will probably have ceased before that time, for the diseased larvæ will be mostly so far decayed that they are not to the taste of the worker. Then let egg-laying begin again in the hive. It will be three days before there are any larvæ to be fed. By that time the nurses will have nothing but wholesome food for the babies, and generally the disease will not again appear. Plenty of the disease in the hive, but not in condition for the nurses to consume it, and so it is not fed.

This theory may serve until some one proposes a better one. At any rate it works out all right in actual practice, that's the important thing.

3. Under the circumstances you mention I should not expect the disease to appear at all. But if it did it would be by the germs being fed to the larvæ.

4. In the hive, no; although scientists may rear the bacilli from the spores with any larvæ.

5. I don't know why they don't tell; possibly they don't know, and possibly they don't think it very important to understand any farther than to know how to get rid of the disease. As to immunity from the disease because of vigorous bees, I have doubts as to there being any bees that are entirely immune; but a vigorous colony will do better work at cleaning out the diseased dead brood than will a weak colony.

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Prices of Nuclei Without Queens

	1	6	12
1-frame	$2.00	$10.50	$18.00
2-frame	2.50	12.00	22.00
3-frame	3.50	20.00	37.00
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Our mail and express service is the best, 24 outgoing trains daily. WE guarantee all queens to be purely mated. All bees free from any disease. Place your order with us and get **Quality, Service and System.**

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Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. 25 years a Queen Breeder.

Prices	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested	$1 00	$ 5 00	$ 9 00	$ .75	$ 4.00	$ 7.00
Tested	1.50	8.00	15.00	1.00	5.00	9 00
Select tested	2.00	10 00	18.00	1.50	8.00	15.00
2-comb nuclei	2.50	14.00	25.00	2.25	12.00	22.00
3-comb nuclei	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colonies	6.00	30.00		5.00	25.00	
10-frame colonies	7.50	38.00		6.00	32.00	
½-pound package bees	1.50	7.00		1.00	5.00	
1-pound package bees	2.00	10.00		1.50	8.00	

Breeders.—The cream selected from our entire stock of outyards; nothing better. These breeders $5.00 each.

Can furnish bees on Danzenbaker and L. or Hoffman frames.

Above price on bees by pound, nuclei, and colonies does not include queen. You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out until first of June. Also nuclei and colonies, if wanted before June 1, add 25 percent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit. Send for testimonials. Orders booked now.

Reference any large supply dealer or any bank having Dun's reference book.

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Finest ITALIAN QUEENS

We have on hand a limited number of select tested queens that were reared during the light honey flow last September, and were wintered in large nuclei. We are offering these queens for $2 50 each, safe arrival and satisfaction guaranteed. Will be shipped any time desired, as soon as weather will permit. If supply is exhausted when order is received, money will be promptly refunded...... Send for booklet and price list of queens and bees by the pound.

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Phelps' Golden Italian Queens will please you.

Fulmer's Gray Caucasian queens are winners; also by frame and pound.

Bees and Queens from my New Jersey apiary. J. H. M. Cook,
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Try Alexander's Italian queens for results. Untested, each, 75c; 6 for $4.25; $8.00 per dozen. C. F. Alexander, Campbell, Cal.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
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Vigorous prolific Italian queens $1.00; 6, $5.00, June 1st. My circular gives best methods of introduction. A. V. Small,
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My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

For Sale—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
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Year old Italian queens, $6.00 a doz. Bees by the pound April and May delivery. Good bees, queens, service, and satisfaction always. Write for prices at once.
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Minnesota bred Italian queens. Virgins, 45c; mated, $1.00. O. C. Wandrie, Frazee, Minn

Italian Bees, 20 colonies, $5.00 each, if all are taken. John Fagin,
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Try my very best Caucasian-Italian tested queens at $1.00 each. Hybrids at 25c each.
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Bees Wanted, any quantity, in N. J. on line of C. R. R. of N. J. or Penn. R. R State kind of hive and price to T. Edward Diener, 28 Jacques St, Elizabeth, N. J.

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Head your colonies with some of our vigorous young three banded Italian queens. Untested, June 1, $1.00; per doz., $9 00; nuclei and full colonies. Satisfaction guaranteed.
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Goldens that are true to name. Write for testimonials; one race only. Unt., each, 75c; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. Tested, $1.50. Sel. test., $2.00. Breeders, $5 00 and $10.
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For Sale—2-fr. nuclei 3-band Italians with queen, $2 25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices. J. B. Marshall & Son,
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Leather colored 3-band Italian bees, $1.25 per pound. Tested queens, $1.00; untested, 75c each; 2-fr. nuclei, $2.00; extra combs, 15c each. Delivery after April 15.
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Queens—Best Italians, one for 50c; 12 for $5 50; virgins, one for 25c; 12 for $2.75. Orders taken now; filled in rotation beginning May 1. Any of my queens proving mismated, replaced free. A. F. Bray, Kelso, Tenn.

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To Inquirers:—I sell no queens directly but have an arrangement with the Stover Apiaries, Starkville, Miss., which I keep supplied with best breeders, and they can supply you with my stock.
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Golden Italian Queens by June 1st. Untested, 75c, or six for $4.25; doz., $8 00. Select untested, $1.00. Tested, $1.25; six for $7.00. Breeders, $5.00. Pure mating guaranteed. Send for circular. J. I. Danielson,
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Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00: Breeders, $5.00 and $10.00.
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Good Italian Queens—Tested, $1.00; untested, 75c. One-pound packages with untested queen, $2.25; 2-lb. package, $3.25. One-pound package with tested queen, $2.50; 2-lb. package, $3.50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4.00. With tested queen, 2-frame, ,$3.50; 3-frame, $4.25. We can please you. G. W. Moon
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Italian Bees (in 10-fr. hives), queens, and fancy table honey; also supplies.
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Golden Italian queens; northern breed; new methods. Our standard, size and honey producing qualities. Write for circular and price list.
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Golden Italian Queens about May 1, that produce golden bees. Good honey gatherers. No foulbrood. Select tested, $1.25 Tested, $1.00. Untested, 75c; 6, $4.25; 12, $8.00. No nuclei or bees for sale.
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Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10.
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Golden Italian queens of the quality you need. Bred strictly to produce Golden bees that get the honey. One, 75c; 6, $4.25; 12, $8.25; 50 or more, 60c each. Prompt delivery and satisfaction guaranteed.
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Golden Italinan Queens bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
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Golden 3 Band Italian and Carniolan queens: Virgin, one, 50c; 6, $2 50; 12, $4.00; 100, $25. Untested, one, 75c, 6, $4.20; 12, $7.80; 100, $60. Select untested, one, 85c; 6, $4.80; 12, $9.00; 100, $70. Tested, one, $1.00; 6, $5 40; 12, $10.20; 100, $80. Select tested, one, $1.25, 12, $13.80; 100, $100. Breeders, $3.00 each.

Bees in packages without combs: ½-lb., 75c; 1-lb., $1.25; 2-lb, $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2.25; 3 frames, $3.00. Add price of queens wanted. We guarantee safe arrival and no disease.
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Gray Caucasians, an exceptionally vigorous, prolific, long lived race. Early breeders, gentle, and best of honey gatherers. Untested queens, $1.50. Select unt., $2.00. Tested, $3.00. Select tested, $3.50. After June 20th, untested, $1.00. Select unt., $1.25. Tested, $2.00. Select tested, $2.50. Improved northern bred Italian queens as good as the best at same prices. If you desire Caucasian queens, please let me book your order early. Ask for circular. F. L. Barber, The Queen Breeder, Lowville, Lewis Co., N. Y.

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Bees without queen: Three-frame nuclei, $2.25; 2-frame nuclei, $1.75; 1-frame nuclei, $1.25. Three-lb. bees, $3.25; 2-lb. bees, $2.25; 1-lb, $1.50. 3-band Italian queen, untested, 75c. Tested, $1.00. If queen is wanted, add price of queen.
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Wanted—Comb, extracted honey, and beeswax.
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Wanted—Beeswax at all times in any quantity, for cash or in exchange for supplies.
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Comb Honey our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
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For Sale—200 cases white clover comb honey. It is mostly fancy stock, and is cased in 24 section shipping cases. Interested parties address
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Beekeeper!—I guarantee to please you by furnishing you my system of queen rearing. Price $1.00.
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The Perfect Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

For Sale—260 L. frames of drawn combs, wired, hives, extractor, etc. No disease.
P. H. Dunn, Akron, Iowa.

Northwestern Beekeepers! Save time and freight by ordering supplies (at catalog prices) near home.
Geo. F. Webster,
Valley View Farm, Sioux Falls, S. Dak.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside. Wash.

Wanted—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

Bee-Keeper, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.
White Mfg. Co.,
4Atf Paris, Tex.

For Sale—50 new 10-frame hives with metal covers complete with frames nailed and wired at $1.75 each; in lots of 25 or more at $1.50 each; also 50 10-frame supers nailed and wired; hive and supers painted two coats at 60c each; for the supers in lots of 25 or more, 50c each.
M. C. Silsbee Co.,
P. O. Coshocton, R.F.D. 3, Haskinsville, N. Y.

The 25c Offer for the "Domestic Beekeeper" six months is for *new* subscribers *only* as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it. Address "The Domestic Beekeeper" Northstar, Mich.

SITUATIONS.

Wanted—Experienced bee-man for season 1917.
Roscoe F. Wixson,
Rt. 28, Dundee. N. Y.

Work wanted in an apiary in Southwest States; some experience as beekeeper.
Mrs. O. A. Peterson, Rt. 8, Owatonna, Minn.

Wanted—Practical beeman, or one wanting to learn the business, to help to take care of bees on shares State age and terms.
Sebastian Iselin,
Care Hotel Wallstab. Sparks, Nev.

Wanted—Position in apiary. I am 22 years old; have had five years experience; have no bad habits; willing to work at truck farming or poultry when not busy with bees.
Russell Belford, Rt. 1, Golconda, Ill.

Wanted—Industrious young man, fast worker, and of clean mental and body habits, as a student helper in our large bee business for 1917 season. Will give results of long experience, and board and small wages. Give age, weight, experience, and wages in first letter.
W. A. Latshaw Co., Clarion, Mich.

WANTED

Trade—Safety writing desk, $75 rifle for bees.
A. J. Graves, Ocheyedan, Iowa.

Wanted—Bees in lots of 25 to 250 colonies within 300 miles of Detroit. Correspondence with full particulars solicited.
A. W. Smith, Birmingham, Mich.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta.D, Box 4H, Cleveland, O.

MISCELLANEOUS

25 LADIES' COOTS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

FOR SALE—Beagle hound pups; beauties; cheap. Leo Bentz, Rt. 4, Granton, Wis.

WANTED — Six-frame power extractor, small circular saw combination for power, four-horse gasoline engine.
W. J. Dixon, Shellmouth, Manitoba.

$80 buys my *new* $120 outfit, consisting of 28 complete 2-story 8 frame hives for extracted honey (comb also); nearly all nailed and painted two coats. With this outfit goes 40 lbs. of super and brood foundation. Will ship anywhere on receipt of price. Goods guaranteed first quality Address.
A. N. Mestler, East Syracuse, N. Y.

QUEENS ON APPROVAL—A select tested queen on approval. Send address for description etc. Bees and supplies for sale.
A. M. Applegate, Reynoldsville, Pa.

PERFECTION Swarm Catcher; no ladder, no cutting of fruit trees. Bees take right to it; ladies can handle it. Directions with each order; shipping weight ½ pound. Price, $1.50. C. S. Keyes, Rt. 3, Salem, Oreg.

FOR SALE—Oak Ridge Apiary, consisting of 150 colonies of bees, house, barn, work shop, cement chicken house, with 5½ acres of land and bearing fruit. Situated 2½ miles from town with two, R. R., one a divison point, 20 miles from a city of 80,000 inhabitants. Address. Box A 12, R. F. D. 3,
Chillicothe, Ill.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 2c stamp at once for prospectus.
SINCLAIR, Box 244, D 41, Los Angeles, Cal.

Crop Reports and Market Conditions

Questions sent out this month were as follows:

1. What is the condition of the honey market?
2. How large have winter losses been?
3. What is the condition of honey plants compared to normal?
4. Are beekeepers making much increase?
5. Are many turning from comb to extracted?
6. What has the honey crop been, so far?

Many more reports were received than last month. A summary by subjects follows:

THE HONEY MARKET

New England reports the demand exceedingly good, with practically all holdings sold. What comb honey there is left is expected to be disposed of before the new crop comes on. In New York and other eastern states conditions are the same. Honey is all cleaned up in the south, but through the central Mississippi states comb-honey seems to be of slow sale and many beekeepers fear they will not be able to clean up all stocks before the new crop comes on. In the west conditions have improved greatly. All extracted is sold long ago, and most of the comb is out of the hands of producers. One locality in Colorado reports two cars of comb still on hand. All in all, however, the situation, even in the comb-honey line is greatly improved over a year ago. The large markets are not glutted with comb-honey as a year ago, though prices range very little if any better. Texas producers report considerable honey of the 1917 crop sold ahead (bulk comb) and at satisfactory prices. The demand for extracted is excellent everywhere. In fact, extracted honey seems to be gaining in favor with the consumers. No extracted is offered anywhere except to supply regular customers, and this at a much increased price.

LOSSES OF WINTER

Where bees have had a flight in the North and East, losses seem to be under normal. But a large part of the North has had a continuous cold, with no flight, and, though the bees went into winter in the best possible shape, there is danger of considerable losses if spring does not open soon. One report from Wisconsin of a 50 per cent loss is certainly above the average.

Conditions have materially improved in the Southeast and reports now agree that losses were small, probably less than normal. The same is true of Texas, which reports generally less loss than last year. Uvalde county seems to be the exception.

It is too early to determine the losses in the North and West, owing to excessive snows and prolonged cold. Several reporters intimate that the loss is apt to be above average.

California has suffered from unseasonable, cool weather, and there have been many cases of spring dwindling, there being two reports of whole apiaries lost from this cause. Losses have been above average, as they have in Washington and Oregon.

CONDITION OF HONEY PLANTS

In all sections north of a line passing through Central Iowa and northern Nebraska, there has been a great amount of snow, which bodes well for excellent condition of honey plants when spring opens up. This is also true of the whole west, including Colorado.

In the districts comprising Nebraska, Kansas, Missouri, Illinois, Tennessee and Kentucky, the amount of winter moisture has been small and clover has suffered as a consequence. Honey-plant conditions are not up to last year. Recent rains have made some improvement in the last two weeks.

The southeast has recovered from the early frosts previously reported and honey-plant conditions seem to be normal. A report from Florida states that the outlook is better than a year ago.

In Texas, the horsemint crop is a total failure, except in the Goliad district, where there is some chance. Mesquite is almost a month late, owing to the backward spring, but prospects for a crop are excellent, as it requires dry weather. The Guajilla prospects in the Uvalde district, seem to be poor. Crop prospects for the state should be probably 85 per cent of normal.

In California, recent rains have bettered the prospect, which is now about 80 per cent of normal. A late spring has retarded growth. All sections must have more rain to secure a good crop. Oranges will soon be in bloom.

INCREASE

There will be no general phenomenal increase by veteran beekeepers in any locality, although some are increasing as fast as they can equip to handle more bees. Beginners are increasing their holdings, generally, in the Middle West.

EXTRACTED TO COMB

There is a general tendency toward the production of extracted honey to supply the increased demand. One very prominent Wisconsin beekeeper is discontinuing comb honey for extracted, as is one in Illinois. The change throughout the country should be large enough to be noticeable.

HONEY CROP

The season is late in both California and Texas, and no honey has as yet been harvested. One reporter in Florida states that his earliest crop is coming in and that it will be 25 per cent better than in 1916.

In Texas, where bulk-comb honey is produced almost exclusively, producers are aiming to get a better price than in 1916, when practically all stocks were sold by December 15.

FOREHAND'S QUEENS

15 LBS. SURPLUS ☞ ***Which Colony is Yours, Mr. Beekeeper?*** ☜ **150 LBS. SURPLUS**

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of $3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens All our yards are pure, so you take no risk in getting a hybrid. Four reasons why you should use our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. WHY? Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

	1	6	12		1	6	12
Untested	$ .75	$ 4 25	$ 8.00	Tested	$1.50	$ 8 75	$17.00
Select untested	1.00	4.75	9.00	Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

GOOD USED PIANOS AT CLEARING SALE PRICES SOLD UNDER WARRANTY AND SHIPPED ON APPROVAL AT OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; $75.
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; $85.
Pease Piano Co., upright, rosewood; $100.
Smith & Barnes, upright, mahogany; $115.
Mason & Hamlin, upright, ebonized, dull finish; $125.
Sheraton upright, mahogany, nearly new; $135.
Empire Piano Co., upright, mahogany, superior tone; $150.
Fischer upright, golden oak, fine condition; $175.
Fischer upright, mahogany, like new; $200.
Story & Clark, upright, elaborate style, mahogany; $225.
Knabe, upright, mahogany, perfect condition; $250.
Behr Bros., upright, mahogany, slightly used; $275.
Knabe, upright, mahogany, Colonial style; $300.
Steinway, upright, mahogany; $350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY, CHICAGO, ILLINOIS

Sweet Clover Seed
FOR WASTE PLACES

We have a few hundred pounds of Sweet Clover Seed that has a few too many weed seeds in it for sowing on cultivated land. This seed would do, however, for sowing in waste places or on poor soil that is not fit for cultivation. We can supply this seed as follows: Ten pound lots or more, 10c per pound.

Postage extra.

DADANT & SONS
Hamilton, Illinois

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Box 10, Andalusia, Pa.

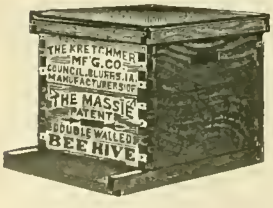
EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1.00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
Loreauville, Louisiana

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate



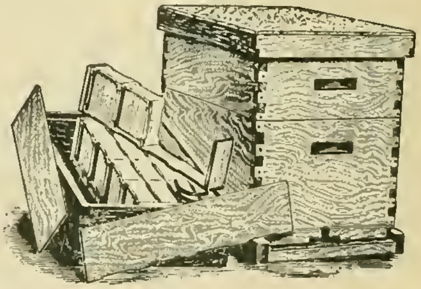
THE MASSIE HIVE
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracling Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

Prices of Combless Packages Without Queens*

Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3.lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 100	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

We have just invented a new style cage for shipping bees, for which patent has been applied. This cage allows the queen to lay while on the trip, which gives the purchaser from three to seven days advantage of the old style cage. It is almost equal to a colony of bees. With every order for 100 pounds of bees we will give one of these packages with a tested queen free. We only have one dozen of these cages, and will not put them on the market till 1918, as our stock of cages was made up before we evolved the new cage.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders, the day they are due. We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States and Canada. Place your orders early, as first comes first served. Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

BEESWAX WANTED

You will save money and freight on your 1917 foundation by shipping us your beeswax and paying only for its manufacture into **"SUPERIOR FOUNDATION."** (Weed process.)

OLD COMBS AND SLUMGUM

Send them along; for the lowest freight rate bill as "beeswax refuse." Our steam process removes every ounce of wax. We render on shares.

SUPERIOR HONEY COMPANY, OGDEN, UTAH

TYPEWRITER SENSATION

$2.50 a Month Buys A Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.

H. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

BEE-SUPPLIES

Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 206 sections and gave two swarms. I am well pleased.

MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested............75 cts. each; $65.00 per 100	Tested.......$1.25 each; $110.00 per 100
Select untested.....90 cts. " ; $75.00 " 100	Select tested 1 50 " 125.00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

ADVANCE IN PRICE

Of all metal goods including Honey Extractors, Honey Tanks, Capping Melters, Wax Presses, Honey-Knives, Boilers, Stoves, Excluders and Honey-boards, Sheet Zinc, Strainer Pails, Cans and Pails, Glassware, Etc.

Only 30 Days Left

In which to buy the above supplies at present prices. On account of the great advance in price of all raw metals, we will be forced to raise our prices on the above items 10 percent or more. If you get your orders in immediately, you will protect yourself against this advance in price. Revised prices effective May 1st.

Comb foundation has already advanced 5c per pound. If you have any Beeswax to sell for cash or trade for supplies, write us at once. We will pay highest prices for wax delivered to any of our branches.

THE A. I. ROOT COMPANY

MEDINA, OHIO

NEW YORK
CHICAGO
PHILADELPHIA
DES MOINES
ST PAUL

LOS ANGELES
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MARSHFIELD GOODS

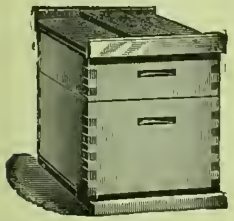
BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin



EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

DON'T WAIT TILL SPRING

Before having your beeswax made into foundation or to buy supplies. Prices were never more unsettled. Better take advantage of present low prices and early order discounts, by ordering now.

Write for prices and discounts.

GUS DITTMER COMPANY
Augusta, Wisconsin

PORTER BEE ESCAPE SAVES HONEY TIME MONEY

PORTER
BEE ESCAPE
PATENTED

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest. Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

THREE-BANDED ITALIANS

Will be ready by April 1, to begin mailing untested queens of my exceptionally vigorous strain of Italian bees. They are gentle, prolific, and the best of honey gatherers. Give them a trial and I am sure you will be a regular customer hereafter. Will book orders now. Circular free. Safe arrival guaranteed in the United States and Canada. Untested, $1.00; 6, $5.00; 12, $9.00. Tested $1.25; 6, $6.50; 12, $12.50.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1.00 each; doz. $9.00. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

"Signed Lumber is Safe Lumber."

It's a pretty good idea (now that the lumber mills in the Southern Cypress Mfrs. Assn. are IDENTIFYING EVERY CYPRESS BOARD THEY SAW) to MENTION TO YOUR LUMBER DEALER, CONTRACTOR or CARPENTER — and to ASK YOUR ARCHITECT to SPECIFY — that YOUR CYPRESS MUST BE

"TIDEWATER" CYPRESS
IDENTIFIED BY
THIS TRADE-MARK
Stamped in the End of Every Piece
or APPLIED TO EVERY BUNDLE

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When a manufacturer places his imprint indelibly upon his product it evidences to the consumer two factors of value which, together, are the sum total of all any buyer wants; these factors are integrity of purpose and complete responsibility on the part of the maker of the desired commodity.

The above legally registered "Tidewater Cypress" trade-mark is now *YOUR INSURANCE POLICY of LUMBER QUALITY.*

It appears stamped mechanically into the end of EVERY board and timber of

CYPRESS "THE WOOD ETERNAL."

Thoroughly dependable Cypress Flooring, Siding, Moulding and Shingles, etc., which come in bundles, bear the same mark on EVERY BUNDLE.

The legal right to apply this epoch-making symbol of STRICT RESPONSIBILITY IN LUMBER MAKING AND SELLING is restricted to those Cypress mills which, by their membership in the Southern Cypress Manufacturers' Association, attest their devotion to its Principles of SERVICE to the CONSUMER. Only mills cutting "Tidewater" Cypress are eligible for membership. (Cypress which grows too far inland is not equally noted for the "Eternal," or decay-resisting, quality.) Only mills which subscribe to the Association's standard of scrupulous care in Methods of MANUFACTURE, INTEGRITY OF GRADING and ACCURACY OF COUNT can belong to the Association. These responsible mills the Association now licenses to CERTIFY THEIR CYPRESS by applying the registered trade-mark with their identifying number inserted.

TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW THAT IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH. IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS."

TRADE MARK REG. U.S. PAT. OFFICE

Let our ALL-ROUND HELPS DEPARTMENT help YOU *MORE.* Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association
1251 HIBERNIA BANK BLDG., NEW ORLEANS, LA., or 1251 HEARD NATIONAL BANK BLDG., JACKSONVILLE, FLA.

INSIST ON TRADE-MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, *LET US KNOW.*

AMERICAN BEE JOURNAL

MAY, 1917

Hon. Eugene Secor, the Poet of American Beekeeping

ARCHDEKIN'S FINE ITALIAN QUEENS AND COMBLESS BEES

April, May, June queens warranted purely mated, $1 00 each: six for $5 00, per doz., $0.00 Bees per lb $1 25. With untested queen, $2 00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment safe arrival perfect satisfaction No disease. Small deposit books your order.

J. F. Archdekin Bordelonville, La.

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association
1424 Market Street, Denver, Colo.

BARNES' Foot-Power Machinery

Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS.

BUY

THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for circular and Price list.

BEN G. DAVIS
Spring Hill, Tennessee

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill.

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in June and July at the following prices, viz.:

	FROM PENN. MISS.				FROM TORONTO, ONTARIO.			
Prices 1 and over	1	6	12	25 to 100	1	6	12	25 to 100
Untested	$ .85	$4 50	$8 00	$ .05 each	$1 00	$4 80	$ 0 25	$ .75 each
Warranted	1.10	5 00	9 50	.75 "	1.35	5 80	10 75	.85 "
Tested	1.50	7 50	13.50	1.05 "	1.75	7.80	14 75	1.15 "
Breeders	3.00 to $10.00 each.				3.00 to $10 00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

	FROM PENN, MISS.			FROM TORONTO, ONTARIO		
	1 to 5 each	6 to 25 each	over each	1 to 5 each	6 to 25 each	50 over each
1-pound and Queen	$2 25	$2.00	$1.90	$3 00	$2 75	$2.65
2-pound and Queen	3.00	2 75	2.65	4 50	4 25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO, ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

Bee Supply Department

Orders shipped day received

Our warerooms are loaded with Lewis Beeware

Everything at factory prices

Send for catalog

Wax Rendering Department

We do perfect wax rendering. It will pay every Beekeeper to gather up all his old combs and cappings and ship to us. We charge 5c a pound for the wax we render and pay the highest cash or trade price.

THE FRED W. MUTH COMPANY

(*The firm the Busy Bees work for*)

204 Walnut Street, - - CINCINNATI OHIO

BEESWAX WANTED

You will save money and freight on your 1917 foundation by shipping us your beeswax and paying only for its manufacture into **"SUPERIOR FOUNDATION."** (Weed process.)

OLD COMBS AND SLUMGUM

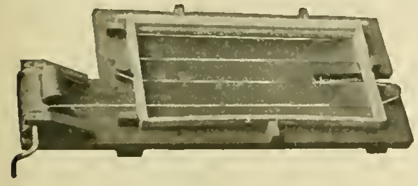
Send them along; for the lowest freight rate bill as "beeswax refuse." Our steam process removes every ounce of wax. We render on shares.

SUPERIOR HONEY COMPANY, OGDEN, UTAH

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois



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WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world, They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

BOOK YOUR ORDERS NOW!

One-pound package, $1.40 each; 25 for $32.50; 100 for $125. Two pound packages, $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3.25 each. No queens. Untested queens, Italian or Carniolan, $1.00 each, or $10 per dozen; 100 for $70 A big lot of fine tested queens cheap. Write for prices. Prices on bees and queens in large lots quoted on application.

WM. ATCHLEY, Mathis, Texas
The Texas Bee and Honey Man

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa

CAUCASIANS

I am the Pioneer Breeder of pure Grey Caucasian bees. Queens, nuclei, and pound packages.

A. D. D. WOOD
Box 61, Lansing, Michigan

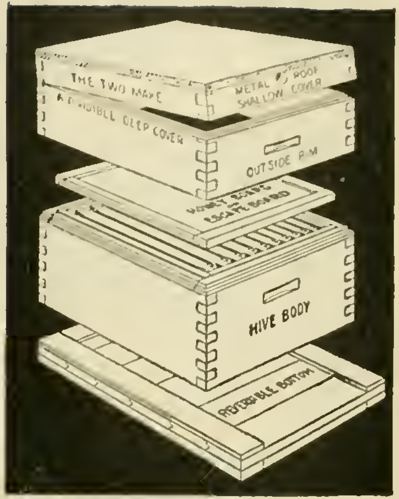
PROTECTION HIVES

Double Wall

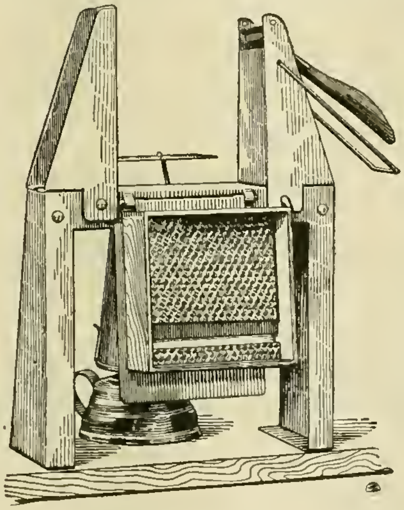
Price of five hives with outside rims, $13.75; without rims, $12.00 f. o. b. Grand Rapids, Mich Delivered to any station in the U. S. A. east of the Mississippi and north of the Ohio Rivers with outside rims, $15.00.

They are double wall with air spaces or packing as you may prefer. A large percentage of our customers use them with air spaces and no packing. Packed hives will not last as long as those that are not, as packing has a tendency to absorb moisture. They have ⅞ material in the outer wall, which makes them substantial. The inner walls are of ⅜ material.

If you have ever had occasion to spend any time in a building single boarded during cold weather you can appreciate the importance of double walls. Great quantities of fuel are required to keep the stove red hot, while you roast on one side and freeze on the other. Double walls in hives are equally as important. Send for catalog and special circulars, showing large illustrations.



A. G. WOODMAN CO., Grand Rapids, Michigan



SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

The sale of Section Fixers has had a great increase this year. This is conclusive proof that they are giving universal satisfaction. They are the finest thing on the market for the purpose, and have given the greatest of satisfaction in every case when properly operated. We have hundreds of testimonials on file.

A. G. WOODMAN CO.,

Grand Rapids, Michigan

TIN HONEY PACKAGES

Do not wait longer, but secure your honey packages at once. The tin plate situation is becoming more serious from day to day. Freight traffic is slow and uncertain. We placed our order for tin plate for our 1918 Bee Smoker Trade some time before a state of war was declared. We dared not wait longer, for fear we could not secure it at all. Our three year contract on tin honey packages is still being honored, and runs until Jan. 1, 1919. We are saving money for carload buyers and others of smaller lots. Send us a list of your requirements. Do not delay. Act at once.

60-pound cans, one and two in a case

Friction Top Tins

	2 lb. Cans,	2½ lb. Cans,	3 lb. Cans,	5 lb. Pails,	10 lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. Woodman Co., Grand Rapids, Mich.

BEE-SUPPLIES of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.

J. W. ROUSE, Mexico, Missouri

SELECT ITALIAN BEES

by the pound. Nuclei QUEENS. 1917 prices on request. Write,

J. B. HOLLOPETER, Rockton, Pa.

ENERGETIC
HONEY GATHERERS
Best 3-Banded Stock

Untested queen, 75c. Bees per lb., $1.25. In quantity price quoted on application. Prompt shipment. Safe arrival and satisfaction guaranteed. No disease. Shipments ready May 15.

GILA VALLEY APIARIES
M. G. Ward, Mgr. Duncan, Ariz.

Quality Service System

SAFE ARRIVAL GUARANTEED

We are doing business under the above conditions. All orders received by us will have our immediate attention. Our STOCK HAS NO EQUAL. NEVER before have we been in the position to take care of our orders as WE are now. We have enlarged our **queen-rearing and pound package business.**

Remember all orders accepted by us will be filled by return mail or express if WANTED. If WE can't do it, WE will refund your money at once. You will be perfectly safe by placing your order with us for PROMPT DELIVERY. We quote prices as following:

	1	6	12
Untested	$1.50	$ 7.50	$12 00
Tested	2.00	10.50	18.00
Select tested	3.00	15.00	24.00

Select breeder, $5.00. Extra select breeder, $10

Bees by the Pound Without Queens

	1	6	12
1-pound bees	$1.50	$ 8.00	$15.00
2-pound bees	2 50	14.00	27.00
3-pound bees	3.25	18.50	35.00

Prices of Nuclei Without Queens

	1	6	12
1-frame	$2.00	$10.50	$18.00
2-frame	2.50	12.00	22.00
3-frame	3.50	20.00	37.00
5-frame	5.00	23.00	44.00

Our mail and express service is the best, 24 outgoing trains daily. WE guarantee all queens to be purely mated. All bees free from any disease. Place your order with us and get **Quality, Service and System.**

J. E. MARCHANT BEE & HONEY COMPANY, Columbus, Georgia, U. S. A.

The Proof of the Pudding Is In the Eating

The quality of Murry's queens and bees is shown in the increasing demand for them. Capacity of queen yards doubled last year and again this season. Advance orders up to March 5th nearly equal to total sales last season. Why? Because they get a square deal.

Three-banded Italians and Golden Italians. Orders filled by return mail. Safe arrival and satisfaction guarranteed. No disease. Health certificate with each shipment of bees or queens.

Queens PRICES	1	6 March 15th to May 1st	12	1	6 May 1st to Nov. 15th	12	100
Untested	$1.00	$ 5.50	$10.00	$ .75	$4 00	$ 7.50	$60.00
Tested	1.25	6.50	12.00	1.00	5.50	10.00	
Select tested	2.00	10.00	18.00	1.50	8.00	15.00	
Breeders	5.00 to $10.00 each, any time.						

For nuclei and pound packages, see March issue of this Journal, or write for circular.

H. D. MURRY, MATHIS, TEXAS

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10.00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1 frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex

DOOLITTLE & CLARK

Have some fine Breeding Queens now ready for delivery. $2.50, $5.00 and $10. Untested, $1.00 each. $9.00 a dozen.

Marietta, Onondaga Co., N. Y.

ITALIAN QUEENS AND BEES

I am better able to supply the trade with my Three-band Italian Queens, Colonies and Nuclei than ever before. Send for circular and prices.

E. A. Leffingwell, Allen, Michigan

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers—results are obvious.

PRICES—Untested, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft, Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN

609 W. 17th Ave., HOUSTON HEIGHTS, TEXAS

THE GUARANTEE THAT MADE "falcon" Bee Supplies Possible

The "falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

HEADQUARTERS FOR BEE SUPPLIES
ROOT'S GOODS AT FACTORY PRICES

FOR

OHIO KENTUCKY TENNESSEE

We carry a large and complete stock of bee supplies, and are prepared to give you prompt service. We have just received several carloads of new fresh supplies. Send for our catalog.

C. H. W. WEBER & COMPANY, 2146 Central Ave., Cincinnati, Ohio

Tennessee-Bred Queens

45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13 50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	9.00	$ .75	$ 4.00	$ .75
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	0.00	17.00	1.50	8.00	15.00
Select Tested	3.00	16.50	30 00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1.50; 2 fr., $2.15; 3 fr., $2.75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year

Select queen tested for breeding, $5.00

The very best queen tested for breeding, $10.00

JOHN M. DAVIS, SPRING HILL, TENN.

BEEKEEPERS' SUPPLIES

Send for new 1917 price list, now ready. Give us a chance to bid on your wants. We can save you money. We are in the market at all times for extracted honey in any quantity.

THE M. C. SILSBEE CO.,
Haskinville, New York
Post-office, Cohocton, Rt. 3, N. Y.

Write for price list and booklet descriptive of our

HIGH GRADE
ITALIAN QUEENS
And Bees by the Pound
JAY SMITH
1159 DeWolfe St.
Vincennes, Indiana

Lewis Sections

HAVE

INDIVIDUALITY

Because they are in a class by themselves—They are not like other sections—Very rarely do they break in folding—In fact, one of our customers writes us that he has put up (folded) thirty thousand Lewis Sections in a season and had not found one SECTION in the whole lot that was not perfect—Beekeepers everywhere, no matter what their preference may be for hives or other bee equipment, agree that when it comes to sections that Lewis Sections are supreme. This is

BECAUSE the material which goes into a LEWIS SECTION is of the right kind, especially selected for the purpose. The stock is sorted and resorted—the discolored stock thrown out, leaving only the whitest material to go into LEWIS SECTIONS.

BECAUSE the V groove, which is the most important process in the manufacture of a section is made just right. In the LEWIS SECTION it is cut just deep enough so that the section will not break in folding. The LEWIS SECTION expert has been supervising the manufacture of LEWIS SECTIONS for over thirty years.

BECAUSE the finishing of the section is given the utmost care. The LEWIS SECTIONS is polished on both sides in a double surfacing sanding machine designed in the Lewis plant especially for this purpose. It insures the uniform thickness of each and every section. The dovetailing of the ends is smooth, clean and just right.

BECAUSE even after the LEWIS SECTIONS are completely manufactured, the packing is considered a very important part of the marketing. All LEWIS SECTIONS are put up in regular standard packages containing a good full count. A tight wooden box is used, entirely enclosing the contents so that no discoloration from air can occur, no matter how long the sections are carried in stock. The package is also strongly braced at all corners, insuring delivery in good order.

At the same price you pay for other standard makes of sections you get all of the above when you buy Lewis Sections

INSIST ON LEWIS SECTIONS—LOOK FOR THE BEEWARE BRAND

G. B. LEWIS COMPANY

BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. USA
MAKES THE FINEST.

Watertown, Wisconsin

Order from your nearest distributer

AMERICAN BEE JOURNAL

Vol. LVII.—No. 5 HAMILTON, ILL., MAY, 1917, MONTHLY, $1.00 A YEAR

SEVENTY YEARS OF BEEKEEPING

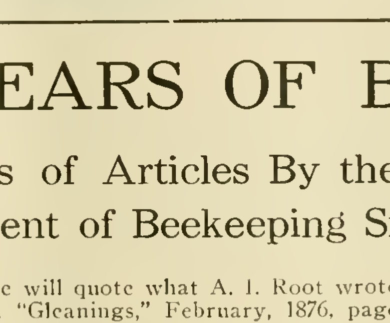
The Fourth of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

WE have already mentioned, in our second number of these reminiscences, that in 1867 suggestions were made for the use of artificial foundation for combs. The original idea of comb foundation dated back to 1857, when Mehring, a German, manufactured "wax wafers" cast in a mold, with the imprint of the cell base upon them. A Swiss, Peter Jacob, in 1865 manufactured a similar article. These were very crude products.

In his "Beekeepers' Guide," already mentioned, Mr. Kretchmer explained how, as early as 1843, his father devised a comb guide, made by dipping a narrow strip of linen in wax and starch, upon which the base of the cells was impressed, by passing it through a pair of engraved rollers. So his father would appear to have been even ahead of Mehring in the idea of comb foundation.

In 1861 Mr. Wagner secured a patent upon "artificial honey-comb foundation by whatever process made." In 1876, C. O. Perrine, a honey dealer of Chicago, bought the patent, which had never been put to use. Frederick Weiss, of New York, manufactured a few hundred pounds of printed wax in 1875. A. I. Root secured a pair of cylinders, made under his direction by a skilled workman, Washburne, but when Perrine claimed the ownership of the patent Root sold him his machine. However, shortly afterwards, Root and others concluded that the patent was worthless and the manufacture of foundation began, with different mills and dies. On the whole, A. I. Root is to be credited with the popularizing of the process. As with the movable frame hive, the time had evidently come for this.

To show how clumsy were the first attempts at making comb foundation, we will quote what A. I. Root wrote in "Gleanings," February, 1876, page 29: "We have at present none for sale, except some that we purchased of Mr. Long (Weiss' agent in N. Y.) The thinnest measures 5 1-3 square feet to the pound and the thickest about three square feet." For some years very little was made as thin as 8 square feet to the pound, and the complaint of "fishbone" in comb honey became an objection to its use. Other objections were raised. It was said to sag in the frames. Bingham, at the Michigan convention of April, 1878, strongly opposed the use of it, contending that natural comb gave the honey a good flavor which comb foundation did not impart. But the great majority were enthused over its use, since it saved the bees the trouble of making so much comb, the cost of which was, and is still, estimated variously at from 8 to 20 pounds of honey, or more, for each pound of comb. It also secures absolutely straight combs, all worker combs, a very uncommon occurrence formerly in any apiary, notwithstanding all the attention given by the careful apiarist to this requirement.



THE VANDERVORT FOUNDATION MILL
(From an old wood cut)

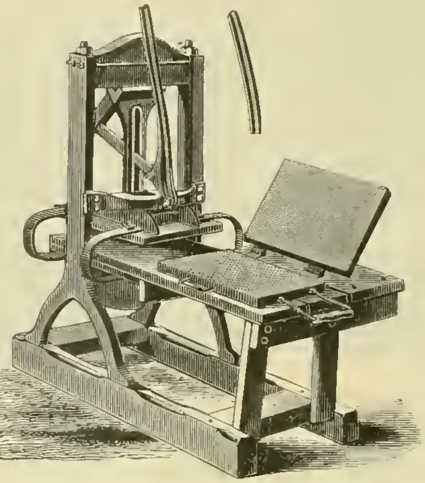
The Dunham machine, the Pelham mill, the Given press and later the Vandervort mills making foundation of different weights, up to 14 square feet to the pound, competed with the Root cylinders. But the press, as well as the plaster casts made in imitation of the European "gaufriers," lasted but a short time, the foundation made from these instruments being very inferior in quality and of heavy weight, besides being brittle and unfit for shipment. Yet many Europeans still confine themselves to the use of the metal "gaufrier" or of a plaster cast, for private use. Its inefficiency is plain when we read of apiarists well pleased with their own make, of a weight of 100 to 110 decimeters to the kilo (4.88 to 5.37 square feet per pound;) while on the cylinders it is readily made of more than twice as many feet, doing away with "fishbone" entirely.

It was during the year 1878 that C. O. Perrine, already mentioned in this article, made an attempt to revive the ancient Egyptian custom of floating apiaries, using the Mississippi River, as the Nile was used, to transport the bees following the crop. He bought a small steamboat, and bought also several hundred colonies of bees, starting from New Orleans in early spring and steaming up stream. But his attempt was a dead failure, in which he sunk a large sum of money.

About 1879, other races than the Italian bees were sought after for trial in America. We had ourselves imported Caniolans in 1876, but had rejected them because of the resemblance of their workers to the common bee in color. Hybrids of these with the common race were difficult to distinguish.

At the Chicago meeting of the North American Beekeepers' Association, in October, 1879, Rev. O. Clute, later author of "The Blessed Bees," under the nome-de-plume of "John Allen," suggested the appointment of a committee to secure the testing of various exotic races, Cyprian, Egyptian, Dalmatian, etc. H. A. King, of New York, had imported two queens claimed to be Cyprians. They were evidently pure, for all the report showed their bees to be exceedingly cross. The following year we tried this importation ourselves and soon had enough of them. We eradicated them as early as we could. Mr. D. A. Jones, of Canada in connection with Frank Benton, of Washington, made a trip to the Holy Land, the Island of Cyprus and Egypt, bringing back a large importation of bees from those countries None of them proved satisfactory. The only foreign bees which have proven of superior quality outside of the Italian are the Carniolan and the Caucasian, both of these races producing bees slightly lighter in color than the common black bee, but without the yellow rings characteristic of the Italian race. Frank Benton, later, made a trip around the world, in the interest of the United States Department of Agriculture, seeking new races of bees. None were found that proved of greater value than the Italians.

D. A. Jones deserves special mention otherwise because of his enterprise in beekeeping at that time. He kept bees on a large scale in Ontario, educated a number of students in beekeeping and founded the little village of Beeton, which is now an important agricultural shipping point. It was in connection with him that McEvoy and others experimented on foulbrood. He established the "Canadian Bee Journal," which was published for years at Beeton. In the early eighties, a little pamphlet, "Foul Brood, Its Management and Cure," written by him, gave the revived starvation method of Schirach (1764-1770) for the cure of malignant foulbrood. Schirach is really the originator of this.



THE GIVEN PRESS—(From an old wood cut)

Among the improvements which modern beekeeping has brought to us, we should range the Doolittle method of queen-rearing, but in going back over the past we must say that although Doolittle popularized this method by adopting it with personal practical improvements, he was not the originator of it. The publication of his book, "Scientific Queen-rearing," in 1888, helped diffuse the method among queen-breeders. To find one of the originators, however, we must go back to "Gleanings" for October, 1878, page 323. In this number, W. L. Boyd, of Hamilton, Ohio, suggests that, since acorns or rudimental queencells are to be found readily in almost any hive of bees, it might be well to "cut them out, keep them on hand and get as many cells as you want by taking a flat stick, removing a larva that has just hatched and putting it in the bottom of the acorn; for the bees will accept the situation at once and soon have a nice sealed queencell from every acorn given them." The indefatigable A. I. Root, half in joke and half in earnest, then suggested that someone had spoken of artificial queencells and that they might be made by dipping a wet stick of the proper size and shape in melted wax. This was the nucleus of the idea which matured later and gave the "Doolittle method," fine descriptions of which were made in Hutchinson's "Advanced Bee Culture" and reproduced in our "Langstroth Revised."

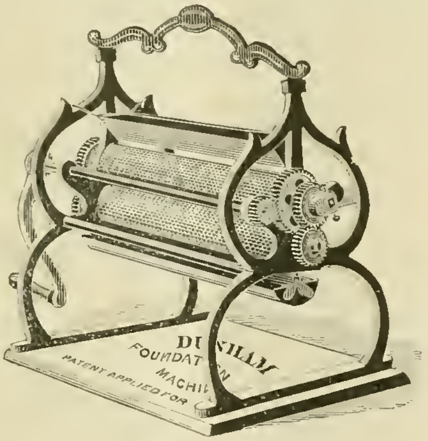
JOHANNES MEHRING, THE INVENTOR OF COMB FOUNDATION

We must not, however, neglect mentioning the Alley method of queen-rearing, which preceded the Doolittle method and is still popular in some of its modifications. His "Twenty-Two Years' Experience in Rearing Bees" became the "Bee Keeper's Handy Book," published from 1882 to 1885, in several editions. His method is also given in "Langstroth Revised" and consists of using strips of brood combs containing eggs, after removing every other egg, for the production of queencells.

Two of the modern leading books on bees were published in 1877, Cook's "Manual of the Apiary" and "The A B C of Bee Culture," by A. I Root. The latter named was first published in installments in "Gleanings." In its present form, under the title of "A B C and X Y Z of Bee Culture," it is the largest book on bees ever published, a real beekeeping encyclopedia.

It is out of the question to mention, in these reminiscenses, every invention made during the progress of beekeeping from the skep or boxhive times. In fact, many inventions were the result of slow ameliorations of original ideas. We can give an instance of this with the drone and queen excluders and queen traps.

Drones were already caught, to get rid of them, in Butler's time. He described what he called "a drone pot," and Langstroth also quotes the use of such an implement in Aristotle's times. "Langstroth's Hive and Honey Bee," second and third editions, mention the possibility of confining the queen to the hive, in these words: "As the queen cannot get through an opening 5-32 of an inch high, which will just pass a loaded worker, if the entrance to the hive be contracted to this dimension, she will not be able to leave with a swarm." In 1860, or thereabout, Collin, a French priest, devised what he called "grilles and tole perforee" screens and perforated iron sheets, having openings of the proper size to allow the workers to pass, and confining the queen and the drones. In 1870, V. Leonard, of Springfield, Pa., is mentioned as making a trap, upon the idea enunciated by Mr. Langstroth (A. B. J., 1870, p. 162) built evidently of wood. In 1881, D. A. Jones, (Gleanings, 1882, p. 200) first mentions perforated zinc for this purpose. Then in 1884, Alley patented his "drone and queen trap" and queen excluders came into use.



THE OLD DUNHAM FOUNDATION MILL

Will we add a little romance to our account of beekeeping progress and invention and speak of the poet of American beekeeping, Eugene Secor? He began writing on bees about 1882 and composed some of the prettiest short idyls and songs for the enjoyment of the English-speaking apiarists. The "Songs of Beedom," published some 25 years ago by Geo. W. York, are mainly from him, while the music is the work of good old Dr. Miller. Not alone on bees does Secor write. A little booklet, "The Calendar," containing a poem for each month of the year, is one of his most delightful productions. There are other poets of the bee in our day, but none to excel him. Mr. Secor has been President of the National Association (1892) and was General Manager of that institution after the resignation of Thos. G. Newman in 1897. He was succeeded in that office in 1902, by N. E. France, one of the most sucessful and practical honey producers, who remained at the helm until the office was discontinued, in 1911. Mr. Secor has also been a member of the Legislature of Iowa.

Looking Backward

BY EUGENE SECOR.

YOU do me the honor to count me among the old subscribers to the American Bee Journal. You say you have found evidence of that fact in articles contributed by me 37 years ago. Yes, I'm proud to say that the Bee Journal has been coming to me without interruption for a long time. I have been looking the matter up a little, and while I cannot say exactly how long I have been on the list, I find that I've been a correspondent at least as long as your investigations show.

I began to keep bees in 1867, so you see I will be fifty years old next summer, plus —. The first thing I did was to buy Quinby's book, and I am pretty sure it wasn't very much later that I subscribed for the first bee journal published in America. Its first appearance was in 1861, if I mistake not.

The first edition of "Quinby's "Mysteries of Beekeeping Explained" was published in 1866, and Langstroth's classic had appeared earlier—1852? I had all these helps before long.

I am quite sure I was a subscriber to the American Bee Journal a long time before I dared to send anything for publication that might come under the eye of the veterans of those days. I was a novice; they were experienced. I was afraid of them. But under the editorship of Thomas G. Newman, who was always very kind to me and overlooked the crudity of my effusions, I began to feel my way into print about 1880.

This is a funny world isn't it? In my younger days I was afraid of the *old* men. Now I'm afraid of the *young* men. 'Tis the young fellows who are running things now. Young America is at the wheel today. The only reason Dr. Miller isn't a back number is because he refuses to grow old. It is always springtime where he abides. I wish that some of the rest of us white-topt has-beens could live in the sunny clime of Perpetual Youth. They say a woman is just as old as she looks, but that a man is just as young as he feels.

Beekeepers ought to be young always, for with them hope is never dead. If a frost kills the fruit-bloom they believe dandelions will feed the girl babies in the hive. If drouth sucks the nectar from the white clover, they are sure melilot will never fail. If linden refuses to give down, buckwheat and a lot of other late flowers are yet to follow. And if the honey crop is light one year we think that after a rest flowers will be doubly sweet the next summer. That is the philosophy of happiness—never to give up, never to lose courage, to forget the unhappy present and have faith in the future.

How many fads have come and gone in my beekeeping day! Many a man set out to revolutionize the industry by some invention or idea that looked so inviting to himself, and perhaps plausible to others until actually tried out, that the bee journals of the time would make interesting reading to the younger generation, if any one has the desire for historical research. Some of the things that occur to me now are: self-hiving, non-swarming, and reversible hives; deep-cell foundation, apis dorsata, red-clover queens, and the fertilization of queens in confinement. All had their advocates, but all have gone to the scrapheap of impractical theories. But in the evolution of all things and the survival of the fit a few improvements have come to stay.

The experienced ones in the brotherhood were never swept from their moorings by the claims of enthusiastic amateurs. Thus it is that conservatism tempers the heat of radicalism, and radicals warm the cold feet of conservatives. So the world is kept in equilibrium, leaning just a little toward the polestar of progress.

Nothing is more evident than the growth of beekeeping literature in the past 50 years. As the editor is reviewing that subject in a masterful way I need not enlarge upon it. But the comparison is like a mule team to electricity.

Forest City, Iowa.

Iowa Field Meet.—A Beekeepers' Field Meet will be held in the City Hall at Fairfield, Iowa, on May 9th.

Beekeeping in Guatemala.—A recent consular report gives a summary of beekeeping in Guatemala which is very interesting. The production of honey is in the neighborhood of 700,000 pounds annually, most of which has, in the past, reached European markets.

Although it is in this section of the country that the stingless bees thrive, the report places special prominence on the fact that the honey entering the markets is produced by the ordinary honeybee, mostly blacks, though Italians are beginning to be imported.

The season for honey is from October to April, which is known as the "dry season."

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ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA

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Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Iowa Inspection Report

If you live in Iowa or elsewhere, be sure and send to either Frank C. Pellett at Atlantic, or to Prof. F. E. Millen at Ames, for a copy of the State Bee Inspection Report for 1916.

Mr. Pellett is thinking of giving up his job of State Inspection. If his resignation is to deprive the beekeepers of Iowa of further reports like this one, it will be regretted. The report in question contains about 100 pages, a number of good engravings, and some 25 or 30 addresses by leading practical beekeepers and writers, besides the usual report of inspection. It is well worth a place in every library of active beekeepers.

The A B C of Beekeeping

The 1917 edition of the "A B C and X Y Z of Bee Culture" is on our desk. It is the largest, most complete and finest work that was ever produced concerning the honeybee. It is a cyclopedia of beekeeping. What more can we say?

Enticing Natural Swarms

In the Farmers' Weekly of Cape Town, South Africa, a contributor reports having lured swarms to empty hives by melting propolis and smearing it inside and about the entrance of empty hives shortly before swarming time, placing also some dry combs inside. The strong odor of the fresh melted propolis enticed the scouts that were in search of a home. He secured several swarms in this way.

Our Oldest Subscribers and Contributors

For the past year we have been trying to get together the names and photos of our oldest subscribers still living and still reading the American Bee Journal. We have asked for the names of all who have been constant subscribers for 30 years or more. But the difficulties are great in gathering together such a list of experienced producers. Some are too modest, others too aged to comply with our wishes. Still we have a list of 12 or 15 which may be increased within the next month, all men of great experience, and we propose to publish it soon.

Meanwhile we give on our cover page the photo of one of the juniors among them. The reader will find within these pages a letter from him and also a mention of his work in the current installment of "Seventy Years of Beekeeping."

Caucasian Beekeeping

We are glad to present to our readers two views of the queen-rearing apiary of the "Station Séricicole" (Silkworm Rearing Station) of Tiflis, Caucasus, also two views of nomadic honey-producing apiaries under the same management.

Professor C. A. Gorbatcheff, who is in charge of these apiaries, informs us that the rearing of queens for sale will begin to a limited extent during the present year in these apiaries. As soon as they are prepared to fill foreign orders the matter will be mentioned in the Bee Journal. We trust the terrible war conflict may be at end by that time, so that the American beekeepers may be enabled to give a full trial to the pure gray Caucasian bees of Russia, by direct communication.

Our good wishes are extended to the Caucasian beekeepers in their progressive efforts.

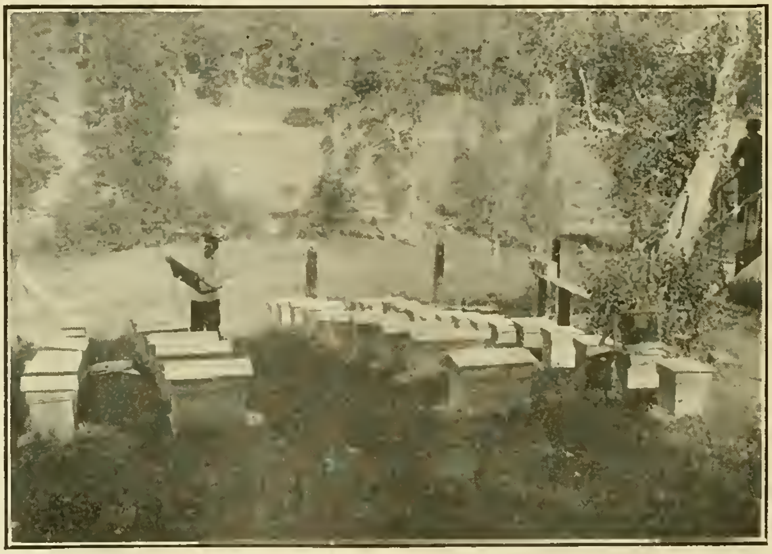
Later.—We acknowledge from the same source an album of views of Caucasian apiaries received with the compliments of the Caucasian Beekeepers, Association. The letter accompanying this album says:

> "Outside of the ethnographic interest to be found in these characteristic views of apiaries, there is another interest in them. It is that of the remembrance which they will leave, for the time is not very distant when these hives will be only a memory; the hives of the Dadant system already having displaced the native hives in several regions of Transcaucasia, during the past 10 years."

The views, some 50 in number, are exceedingly interesting. We propose to publish them, a few at a time, in these columns. They will show the diversity of ancient methods in a country which is now making great strides of progress. Russia is coming to the front.

Apiary Inspection

After the publication of Mr. Pellett's inspection criticisms, in the March number, followed by Mr. Bender's remarks in April, we are glad to give a summary of the same subject by our



ONE VIEW OF QUEEN-REARING APIARY OF THE SERICULTURE STATION OF CAUCASUS AT BAKOURIANY, 5428 FEET ABOVE SEA LEVEL riend Dr. Phillips, who is better placed than any of us for such work. After reading it the reader will conclude, as we had done already, that there is after all a great benefit in apiary inspection but that that benefit is mainly educational. The practical apiarists who, like myself, kept bees for half a century without ever seeing any foulbrood and all at once found themselves surrounded with it, have a very deep conviction that, if no fight had been made, the disease would have swept the country before becoming extinguished.

Although far from eradicated everywhere, it is so nearly controlled that beekeeping is thriving in spite of an occasional show of the disease. Foulbrood has been a blessing in disguise, for it has compelled more attention to the business of beekeeping.

Sacbrood

Dr. G. F. White, the scientist who has first established the bacteriological difference between the two kinds of foulbrood and who has also named "sacbrood" because of the appearance of the dead larva and its resemblance to a sac full of liquid matter, is now giving us a thorough description of sacbrood in Bulletin No. 431 of the United States Department of Agriculture.

Decoy Hives

The Editor not long ago met an experienced beekeeper, Mr. S. L. Cork, of Peru, Ill., who has had considerable experience with the securing of absconding swarms by the use of decoy hives. Mr. Cork says that he has succeeded best by placing the decoy hives in the forks of trees. During the season of 1916, a notable year for natural swarming, he fastened 11 hives in trees in this way, six feet or more from the ground, and in each of these a swarm volunteered to locate. Three hives placed on top of a shed secured only one swarm. It is creditable and easy to understand that bees would naturally look for tree hollows some distance above ground rather than for lower abodes.

The Queen is Coming

Here is a story which went the rounds of the European bee magazines some 15 years ago. It may not be true, but "*se non e vero, e ben trovato*" (if not true, it is likely).

"Lord Cecil is a lover of bees, but his pet pursuit was the cause of a little trouble to the folks of the city. He had a queenless colony once and wrote to a breeder for a queen, asking to be informed by telegraph when she was to be sent. To satisfy him, the shipper wired: 'The queen will reach your station at 3:40 p.m.' On his arrival at the station at the indicated hour, he was much astonished to see a crowd of people in their best clothes. The mayor was there in a frock coat, and a band was playing its finest tunes. Upon enquiry he ascertained that one of the telegraph operators had been indiscreet enough to give out the announcement of the arrival of the Queen of England at that hour. A few words of explanation dispersed the disappointed crowd."

Peppermint for Adult Bee Diseases

Mr. C. W. Aeppler transmits to us the translation of a letter from an eastern Switzerland apiarist recommending the use of peppermint in diluted honey to be sprinkled over the bees in diseased colonies which are suffering from diarrhea, paralysis, May disease and similar troubles.

In Italy, in the Province of Ancona, in 1916, similar remedies were recommended by apiarists who claimed that a preparation of honey with lavender, ginger, rosemary and other tonics was beneficial. We believe these things may do good, but such severe epidemics as the Isle of Wight disease would probably not yield to a treatment of this' sort. Who knows, however, but that the initial appearance of the disease may be prevented by the use of tonics in the food of the bees?

President Wilson on Production

The address of President Wilson to the people published on Monday, April 16, has been sent to all publishers of agricultural magazines. We cannot give it in full, but we should give emphasis to a few points of this memorable appeal.

"The supreme need of our nation and of the nations with which we are cooperating is an abundance of supplies, and especially of food stuffs..... The world's food reserves are low ......Every one who cultivates a garden, helps, and helps greatly, to solve the problem of the feeding of the nations."

Not only is it well to heed the appeal of our President to all producers to work as earnestly as possible in the production of food stuffs; it is also well to urge the people to economize their resources.

America has been—and is yet—a wasteful nation. Let us remember that the time may not be very far when some one may need that which we carelessly waste. Let us not only produce all we can, but save all we can. What we waste might be useful to some one else, if we do not need it ourselves.

Bees and Pollination

For an evidence of the usefulness of bees in prune pollination, read Bulletin No. 274 of the California Agricultural Experiment Station, by A. H. Hendrickson. It is quite interesting. It is another rivet in the evidence favoring bees in plant fertilization.

This Season's Crop and Its Price

We call our readers attention to the page of Crop and Market Reports in the back part of this magazine. Reports of offered prices and contracted prices for 1917 are beginning to filter in.

Just what the price on honey will be when fall comes is exceedingly hard to determine. We are passing through an unusual period which is subject to change in a comparatively short time.

One thing which we would urge upon our customers, however, is to make some distinction between their retail and wholesale prices of honey. Too many beekeepers in the past have sold honey locally for 10 cents or even less for extracted per pound and then bewailed the fact that they were offered only 6 or 7 cents in a wholesale way.

ANOTHER VIEW OF THE SAME QUEEN-REARING APIARY

The Necessity for Increasing the Honey Crop

BY DR. E. F. PHILLIPS.

THE present necessity of increasing and conserving the food resources of the country, advocated by the Secretary of Agriculture in recent statements, should be realized by every beekeeper, chiefly from patriotic motives, but also from his own interest. The rapidity with which the unusually large honey crop of last year was sold does not indicate danger from overproduction, even in times of peace, and there is every reason to expect that 1917 will see a good honey market.

There need be no fear of overproduction in the face of a probable shortage of sugar. On this latter point the Secretary of Agriculture says in his statement of April 7, "Only about 20 percent of the supply of sugar normally consumed in the United States is produced domestically, and this amount cannot be increased appreciably during the coming season. Unless normal imports of sugar reach our shores, therefore, a shortage of this food is inevitable." After mentioning other forms of sugars, the Secretary says: "In many parts of the country honey production may be increased by closer attention to bee-culture."

Beekeepers should do their utmost this year to increase production, not only by increasing the number of colonies in so far as it can be done without decreasing the crop, but especially by giving their bees the best of attention. Those who have their bees in box-hives are being urged, so far as they can be reached, to adopt the modern equipment, but this will be valueless unless they at the same time adopt modern practices. Natural swarming should be curbed as much as possible, and increase should usually be made by artificial division. The crop may often be materially increased by giving the bees plenty of room for storage, for gathering often ceases when bees are overcrowded.

In this regard many commercial beekeepers are not doing their best. Those owning only a few colonies may profitably increase the number of their colonies, but they should remember that without intelligent care bees will not be profitable, except in rare seasons. The tendency at present is rightly to encourage the professional beekeeper, who knows how to get the most from his bees. The professional beekeeper, and those who wish to enter this class, should at once consider the establishment of additional apiaries, care being exercised not to overstock any one locality. To those who have not begun outapiary management, this year promises to be a good time to make the start.

Nobody can tell now what the crop of 1917 will be, but the prospects over most of the country seem good. Prices promise to be as high as those obtained for most of the 1916 crop, and possibly higher. Not more than one-tenth of the available nectar in the United States is gathered at any time, so beekeepers can do a patriotic service and can at the same time bring profit to themselves by saving some of the wasted nectar.

In order that the beekeeper may obtain a fair price for his honey and that at the same time the consumer may obtain it at a reasonable price, the bulk of the honey crop should as usual be sold on the home markets. This will do much to prevent a glut on the market in the fall. Before sending honey to wholesale markets, the beekeeper should get all the information available concerning the crop and should also have definite knowledge of the demands of the market.

The Department of Agriculture, through the Bureau of Crop Estimates, will issue the usual honey crop reports in May, July, September and November. The Office of Markets proposes to make available the data of crop movements at intervals during the shipping season. No beekeeper should send honey to wholesale markets before consulting these reports. The Bureau of Entomology will, of course, continue to assist beekeepers with the various problems of production. All of these offices will gladly assist beekeepers in their respective fields.

The beekeeper's part in the present campaign of food preparedness is first to produce all he possibly can, and secondly, to market it wisely and only after he has full information concerning the markets. Beekeepers will do much toward correcting bad market conditions by distributing their sales over a longer period, for honey is no longer a seasonal food, and to dump all the season's crop on the market at once has so far invariably led to lower returns to the producer, but has not correspondingly decreased the price to the consumer. When honey is produced in large quantities, the market facilities will doubtless be increased so as to take care of the honey as soon as it is removed from the bees, but at present it is often better for the beekeeper to hold it.

This brief note will serve to indicate wherein the beekeeper can "do his bit" in this emergency. He should realize that to assist in producing an important food is a patriotic act.

Washington, D. C.

Burning Hives Affected With Foulbrood

BY F. DUNDAS TODD.

SOME months ago I noticed that Dr. Miller thought the wisest way to handle a few cases of American foulbrood in his apiary was to wipe out the whole thing, lock, stock, and barrel. If his example is to be followed to any extent by others it may be worth while for me to set down briefly the way I handle such cases, for I fancy I have had about as much experience in burning affected colonies as any man on this continent. I frankly own I made rather a mess of things to begin with, but now I can enter an apiary in the evening when flight has stopped, smother the bees and have three or four hives a glowing mass of cinders in about half an hour. The biggest job I ever tackled was to clean up an apiary of 10 colonies and four box-hives, most of the hives being three stories high. The owner refused to assist in any way whatsoever, so I went at the affair single-handed, and in two hours and a half there was nothing left to indicate that an apiary had ever existed, beyond a big mass of glowing embers.

When I find foulbrood in any apiary and have shown it to the owner, I arrange with him to dig a hole three feet square and at least a foot deep, choosing the spot where there is little likelihood of damage resulting from the heat of the fire. In an ordinary case a matter of 20 feet from the nearest tree is generally enough, but due allowance is made for the direction of the wind. The nearer the hole is to the apiary the better, but I have had in the city to wheel heavy hives along rough alleys to a vacant lot covered with huge stumps and underbrush.

Then I want him to have on hand at least 30 pieces of first-class stove wood. We need a fire, a real fire, the kind a boy makes for a camp fire without worrying about the cost of fuel. In a beehive there is a most amazing amount of water that must be evaporated before combustion can take place. I plan to let nothing escape me, not even one bee, and it rather surprises a novice to see how quickly a roaring fire will dampen down the moment several thousand dead bees are dumped on it. The same is true when the combs are placed on the fire, for in a few minutes the water from the brood and honey will drown it out unless the heat be very great.

When, therefore, I reach the apiary my first task is to kindle the fire, so arranging the wood that the whole will be a mass of hot coals when I want to use it.. I want the earth in the bottom and sides of the cavity to be very hot, so that all water will be quickly evaporated.

The fire burning freely I attend to the smoker. In my first adventures I tried the smothering system of our forefathers, digging a hole, starting a small fire and adding sulphur, then straddling the fire with the hive without a bottom-board. The first downpour of bees simply drowned out the fire, and maimed bees were crawling everywhere. Then I turned to the smoker. I had often heard that just a whiff of burning sulphur would almost instantly smother every bee of the colony, but I want to assure my readers that is far from being the truth, for even with a powerful blast of sulphur fumes one cannot kill all the bees in less than three minutes. When I have to kill bees I try to do the job as speedily as I know how. A weak colony can be wiped out in a minute, but a hive of 20 frames covered with bees is another story, for the instant they fall off the combs they choke the air passages, cover up each other, and so prevent the fumes reaching every cranny of the hive.

It is the first few blasts that count above all things, consequently the problem is to have plenty of burning sulphur in the smoker, burning so freely that it is simply a molten, blazing mass. To attain this, start the smoker with just a little rags and work the bellows until the fire is burning freely, then drop in several small pieces of rock sulphur and get them burning just as well, then add more until you have about a quarter of a pound in all. In a little while smoke will cease to issue from the nozzle, blue flames will be common, and the gas will issue from the explosive force.

I find it advisable, though seldom necessary, to wear my working bee suit, including gloves, as, if the hive be the least rickety, bees will leak at unsuspected places and I kill them with the fingers of the left hand as fast as they appear.

All ready, I kneel in front of the hive and place across the entrance a piece of lath, cut about an inch and a half shorter than the full entrance, leaving the blank at the right. Into this space I push the nozzle of the smoker and pump steadily and persistently until all noise in the hive ceases. To make sure of inside conditions I generally place my ear against the side of the brood-chamber, and when all is quiet I proceed to the next victim.

It is very important for the inspector's comfort that he inhale none of the fumes, so I generally endeavor to choose a night when the wind is from a southerly direction. But such ideal conditions are not always obtainable, for instance, last summer in Vancouver, north winds were persistent for weeks, so twice I inhaled considerable sulphur fumes on account of a sudden change in the direction of the wind. I usually lie out full length with my head to the left of the hive and face turned away, but even with these precautions I was caught. The result in my case is that for about three days after being "gassed" I am very languid and do not feel fit for much exertion.

The bees all smothered, I carry the first hive to the fire, bottom-board in position. Setting it down I remove the cover, turn it upside down and lay it to the left. Then I lift the hive off the bottom-board carefully and set it on the cover. On the bottom-board lie the dead bees, many thousands of them when the colony is strong. Lifting the board I shoot the bees into the fire, which ought to be now a solid mass of glowing embers. At first the fire will deaden, but as soon as it brightens up, I lift the hive and set it squarely in the center, then strip off the quilt so that the space between each pair of combs becomes a chimney. In a minute there is fierce hissing as the water runs out of the brood and honey, but in a few minutes a really strong fire will overcome all that, so I now set bottom-board and cover by the side of the body, and then carry in the next hive to repeat. By this time the burning wax gives a powerful heat so that one can pile up all the rest just about as fast as they can be handled.

The chief reason for digging the hole is to make certain that no honey can escape. The embers from the firewood and hives easily fill the hole and burn everything combustible. The beekeeper generally fills it in before retiring so as to avoid all risk of fire on the premises.

In conclusion, let me repeat that the chief essentials are a powerful fire in the hole, and a thoroughly hot smoker well charged with sulphur. Either can be easily extinguished by covering up with dirt; as a matter of fact when I have smothered the last colony I throw a loose handful of dirt in the smoker. Having so much smothering to do, I keep one specially for the job, preferring the variety with the hinged cover and forward projecting nozzle.

Victoria, B. C.

[Mr. Todd uses the heroic treatment for foulbrood. He has repeatedly told us that he does not believe in trying to save the bees or the hive of an affected colony. Of course, where there are only two or three cases and they are bad, and one does not wish to be bothered with much work, it may be advisable. Yet if the transferring is done as carefully as his "burning," and if the empty hives are carefully singed immediately with a tinner's or painter's gasoline torch, there is no possibility of transmitting disease. By all means save the hive. But it is better to burn up the honey and the combs of the diseased colonies.—EDITOR]

A THREE-STORY OBSERVATORY HIVE—F. Dundas Todd

The California State Meeting

BY J. E. PLEASANTS.

THE California State Beekeepers' meeting was held at Exposition Park, Los Angeles, Feb. 16, 1917. This was one of the best meetings the association has had for years—short, harmonious, and instructive. The first day was mostly devoted to business.

The resolution for beekeepers' Legal Aid was repealed almost unanimously, it being the consensus of opinion that such a clause in the Constitution would only have a tendency to cause trouble.

The election of officers resulted in almost the whole staff and Executive Board being chosen from the northern part of the State. And the next meeting will be held in the North. B. B. Hogaboom, of Elk Grove, Sacramento county, was elected president.

There were interesting and instructive lectures and talks on a wide range of subjects. George J. Brown made a strong talk on the methods of the "United Honey Producers", which was enthusiastically received. Mr. Brown has recently been made president of the United Honey Producers for California. A better choice could not have been made.

Prof. Coleman's moving picture display on California beekeeping was indeed a work of art. The work he has accomplished in this line, and has in prospect, is almost the work of a genius, if means can be obtained to complete this. This is the only scenario of a complete series which Prof. Coleman has in progress of making, for the showing of every phase of the life of the apiary and handling of honey and wax. It is a stupendous work if it can be carried to completion, as no doubt it will be. The educational value of such a series of films, for schools and colleges, and for the beekeeper and laity, can hardly be over-estimated.

The ever-recurring container subject was brought up by J. D. Bixby, who advocates the use of barrels for extracted honey. The barrel *vs.* can and case was spiritedly discussed, but it would seem, while both have their merits, the 5-gallon can and its twin, securely protected in a strong case, have been proven to be the survival of the fittest. They have the advantage of being non-leak in all climates, and about as convenient a method of handling as we have yet had. The barrel was tried out long ago and discarded in most places.

Marketing through the Fruit Exchanges was ably handled in a paper by T. O. Andrews, Inspector for Riverside county, and some practical points brought out.

A standard color for honey was the subject of a discourse by M. C. Richter, who is an advocate of blending honey. While some advocate and practice this, many object to it, as it would put all honey on a level. The producers of the fine grades of white delicately flavored honeys, such as sage, white clover, etc., would suffer by such a blending. It is necessary to have the different grades and flavors to suit different tastes.

Secretary Shaffner spoke on the Legal Defense Fund. This resolution, however, was voted down and stricken from the Constitution, it being the opinion that it only caused trouble.

The address by Supt. Davison, of the State Exposition, was a strong plea for a good standing exhibit by the beekeepers. This ought to be done.

Mr. Mendleson was asked to supply a glass globe filled by the bees for the exhibit, which he agreed to do.

The meeting at Exposition Park was most appropriate. The Park is owned by the State, and Exposition Hall is designed for the use of State societies. The museums of Exposition Park are full of interesting collections peculiar to the Southwest. These afforded entertainment to the members out of routine hours. The specimens taken from La Brea Rancho asphaltum beds are a wonderful collection. The mastodon, sabre-toothed tiger, and others from this oil bed, are rare and preserved as prehistoric remains seldom are. It is something which all our residents, as well as tourists, ought to see.

The election of officers resulted in a complete staff, and almost all of the Executive Board, being chosen from the northern part of the State. The next annual meeting will be held in the North.

Orange, Calif.

Different Methods of Queen Introduction

BY DR. C. C. MILLER.

IN the British Bee Journal of Dec. 21, 1916, is a fine summing-up of different methods of introducing queens by W. A. Sheppard. He says:

"Numerous plans have been devised for introducing queens, but there are very few that can be absolutely relied upon to give satisfactory results under all conditions and circumstances. At certain times of the year, for instance during a honey flow, the introduction of an alien queen presents very little risk, and almost any method employed would be successful then; but when there is no honey being brought in by the bees, queen introduction often presents many difficulties, especially to the amateur beekeeper. The following are some of the methods that have been recommended during the last few years:

"Water Method of Queen Introduction.—Kill the old queen; remove all combs from the hive and shake into the bottom with a sharp jar, all the bees possible. Sprinkle the mass of bees on the hive floor until they are soaking wet. Use plenty of water; there is no danger of overdoing this part. Wet the new queen thoroughly and put her on the pile of bees. Put back combs, and the job is finished.

"Introducing By Smearing Queen With Honey.—Put the queen in half a cup of honey. Do not be afraid to put her away down into it with your fingers. Smear her all over, the bees will lick her clean. Get her covered deep, and pour her and the honey into the top of the brood-chamber.

"Simmins' Direct Introduction.—1. Keep the queen *quite alone* for not less than 30 minutes without food, but warm.

"2. Insert after dark, under a quilt, first driving the bees back with smoke.

"3. No further examination is to be made until after 48 hours have expired.

"4. Make no division of or nucleus from the hive within three days prior to insertion of queen.

"Arthur C. Miller's Smoke Method.—Inject into hive a cloud of thick white smoke, and use enough to get the bees into a heavy roar. Then run in the queen, and shut in the smoke and queen for about ten minutes.

"Requeening Without Dequeening—Doolittle's Method—If you wish to supersede any queen on account of old age or any other reason, you have only to put on an upper story with a queen-excluder under it; place a comb of brood, with a queen-cell upon it, in this upper story. After the queen-cell has hatched, withdraw the queen-excluder and your old queen is superseded without you ever having to find her.

"The foregoing are methods of introducing queens without the use of a cage, but there is little doubt that there is less risk of failure and without much disturbance to the bees by using either of the following plans:

"Frame Cage Method.—A wire-cloth cage is constructed large enough to take an entire Langstroth frame. Into this place a comb of hatching brood, after first shaking off all the old bees; then insert the queen and hang the cage in the center of the brood nest for two or three days, when the comb can be removed from the cage and replaced in the hive. The young bees that have hatched out in the cage will not be antagonistic to the fresh queen. This is the only one they ever knew.

"Pipe Cover Cage Method.—An ordinary wire-cloth tea strainer with the wire attachment for the tea-pot removed makes a good introducing cage. It is pressed into the face of a brood-comb about half an inch deep with the queen underneath. She is liberated after about 48 hours if the bees are then seen to be friendly disposed towards her. If not, she can be caged again for a further period.

"Two Other Cage Methods.—Catch the old queen and place her in the cage intended for the new queen. After a few hours remove her and put the new queen in the cage. The bees then more readily accept the new queen, as the odor of the old queen remains behind. Or, put the queen to be introduced into a new cage with one or two newly-hatched bees from the hive to which you are going to give her.

NOMADIC APIARY FOR HONEY PRODUCTION AT THE SERICULTURE STATION OF CAUCASIUS. (Sericulture is the silkworm industry)

"MAILING CAGE METHOD.—The ordinary mailing cage, inverted over feed-hole, is generally a safe and easy way of introducing a new queen. The bees of the hive liberate her in from 24 to 48 hours by eating away the candy. This plan can be much more sure by adopting either one of the methods just described, in addition. If at the same time a slow feeder is placed on the hive containing warm thin syrup, it also helps considerably by putting the bees into a favorable humor for accepting a new queen."

LESSENING THE RISK.

Although the plans enumerated by Mr. Sheppard may be successful in general, yet with any one of them a certain percent of failures may be counted on. The number of these failures would be considerably lessened if we could be rid of the older bees of the colony to which we desire to introduce a queen. For it is these older bees that are especially antagonistic to any royal stranger. Fortunately it is possible to rid a colony entirely of all its older bees, the field bees, and in the case of a queen of considerable value it is well worth while.

If the hive be removed to some distance, and in its place be set another hive containing one or more frames of brood and honey, the bees that go afield on their return from gathering, instead of going to the old hive in its new location, will go to the old location and enter the new hive. Taking advantage of this fact, we will lift the hive from its stand, set it temporarily to one side, and set in its place an empty hive, and into this empty hive put one or two frames taken from the old hive, perhaps the two outside frames which contain little brood. Vacancies in either hive may be filled with dummies or otherwise. Any supers that may have been on the old hive will now be put upon the new one, and the hive-cover placed over all. Upon this cover we will set the old hive, of course covering it up. We may safely count that within two days all fielders will be out of the old hive and in the new. Therefore, at the end of that two days there will be only the younger bees in the upper hive, ready to receive hospitably any queen that may be offered. The queen may be given in an introducing cage at the time the change of hives is made, provided it takes two days for her to be released from her cage; if the time of releasing be less, then the giving of the caged queen must be delayed accordingly. In three to five days after the queen is out of her cage, the old hive may be taken down and restored to its original place on its stand; any comb or combs that had been taken away being returned, and the hive that has been upon the stand for a few days entirely removed. The bees that have become fielders in the hive that has been on top will now, upon their return from the fields, settle upon the top of the hive where they suppose their entrance ought to be, perhaps forming quite a cluster. Soon, however, some bee of exploring turn will make its way down the front to the entrance below, others will follow, and all will be well.

ABSOLUTELY SAFE INTRODUCTION.

There is, however, a plan of introduction that is entirely safe. It is some trouble, but may be well worth while in the case of a valuable queen. About eight days before you expect to introduce your queen, go to a strong colony and put all but one brood in an upper story over an excluder, leaving the queen with one brood below the excluder. Another way is to put an excluder over a strong colony, over this put an empty story, and fill this empty story with frames of brood taken from different colonies. This plan has the advantage that you may choose only the best frames, those that are filled with well matured brood. Eight days later, when all brood will be sealed, brush every bee from these combs, put them in an empty hive, set this hive on a stand of its own, put in your queen, and close up tight so that you are sure no bee can get in or out. If you think there is any danger that the brood may be chilled at night, then you must put the hive in a room that will be warm enough at night.

A still better way is to put the beeless brood in a hive-body over an excluder upon the hive of a strong colony, putting in the queen and covering up without any bees. Of course young bees will at once begin emerging from their cells, having known no other mother will be entirely friendly to the queen. About five days from the time the queen was given, these bees with their brood and queen must be put upon a stand of their own, in case they were not at first put upon their stand, and the entrance must be opened enough to allow the passage of one bee at a time. As more room for passage is needed, the entrance must be enlarged. In a few days you will have a good colony without having endangered the life of the queen in the least.

ANOTHER NOMADIC APIARY OF THE SERICULTURE STATION OF THE CAUCASUS

Why Some Beekeepers Fail

BY H. B. PARKS, BIOLOGIST.

THE following paper is the result of an investigation as to why so many of those who keep bees do not make a success of the business and why so many of those who have tried have failed.

The area covered by this investigation is the Grand River System of Northwest Missouri. While this is not a region of extensive orchards, it is a section where small orchards are very common, where alfalfa and sweet clover are most abundant. Of the 159 species of plants which are visited by the honeybee for nectar, in a very similar location in Illinois, as reported by Dr. Charles Robertson, who has done more perhaps than any other man in the Mississippi Valley in studying insect visits to plants, 142 grow in greater or less profusion here also. This region is so located that it partakes of the character of both the prairie and forest. The climate is favorable to the bee, as the bee-trees cut each year attest.

A few attempts at interviews with bee-men were so laden with results that the writer adopted the census method of gathering information. Few men like to tell of their failures and only a few who were successful would talk. A reliable beeman was interviewed, facts about his own experiences and what he knew about others were recorded, then these statements were in a casual manner brought to the attention of the one about whom the statement was made. In almost every case the statement was verified and some additional material added.

The writer attempted to follow the outline given below:

1. Time you have been engaged in bee work?
2. How did you commence?
3. Why did you start beekeeping?
4. What kind of bees did you have?
5. What kind of hives did you use?
6. What was your greatest trouble?
7. Did you have disease in your hives?
8. How many seasons did you fail to get a honey flow?
9. What was the reason?
10. Would you advise others to keep bees?
11. How many swarms should a man keep?
12. Do you count yourself a success

or failure as a beekeeper?

13. In either case, why?

Mr. B.—The first man interviewed is a bee lover; has kept bees 35 years and is well informed. He has at present 37 colonies of bees. This year he took off 2700 pounds of section honey from 30 colonies, spring count. He is a small farmer, and lives on a 10-acre farm at the edge of a small town. He took up beekeeping as a boy because of an accident that lamed him. One year he took off 8000 pounds of comb honey from 32 colonies. Some years he got only 300 pounds from 30 colonies. He would advise all farmers to keep a few colonies, but thinks only the specialist can make money with bees. He has no disease and few moths; attributes success or failure to get honey to the food supply of the bees.

Mr. X. is a specialist, and did not like to talk. He has about 200 colonies, but would give no figures. His honey is on sale in a number of the neighboring towns. He says that any one who attends to the business will have success. Does not advise farmers to keep bees.

Creek from
Dalby Bridge
Rayment

The Floods in Australia Come Down in a Night and Seldom Extend Over Two Days

Mr. C. H. was crippled by an accident 15 years ago; was set up in the bee business by his employer, and did well for a few years, but did not like bees. The moth killed most of his colonies; has only five colonies today. Some years he never put on supers or removed those already on. Beekeeping is a failure and the man a fool who tries it. In this case the hives were in a thicket of plum bushes, and had not been touched for three years.

Mr. G. lives in town, and has 10 colonies; keeps this number and sells the excess swarms; has never had any trouble. He advises all to keep a few colonies; claims a good honey flow each season.

Mr. C. C. was a common type of the fall of 1916, and was the most enthusiastic bee-man found. Had one hive. Had taken off 30 pounds of honey, and knew the A B C book by heart. Had already figured out what he would do with 50 colonies of bees.

Mr. G. W. is the old style bee-man of the timber. His pastime is hunting bee trees. Has caught all his swarms or reared them from wild swarms. He uses gums and the old box-hives. Has had no moth or disease that he knows of. Mice have bothered him. Has 10 hives, and got 18 or 20 gallons of honey this year. He advises all to keep bees.

Mr. M. F. R. has no bees at present, but knows all about them. He bought his colonies at a public sale because the auctioneer was eloquent and the bees cheap; paid 75 cents a colony for 12 colonies, and $85 for supplies; lost every new swarm. The bees started a runaway that caused a loss of $65. That fall he took off 125 pounds of honey. The next summer he had similar luck. The third spring he had only four colonies that were alive. The hogs got into the orchard and upset the hives.

Mr. M. purchased two stands in new hives with supers from a bee firm two years ago. He placed all the supers on the hives and nailed them there. Has never looked into the hives since that time. He is waiting for the colonies to become strong before taking the honey; expects to take off a large amount next year. If a bee has plenty of room it will not swarm and continue to deposit honey. The easiest way to keep bees is to give them lots of supers and every two or three years take off the honey.

Mr. Mc, living on the next farm, showed me a very fine swarm that came from one of the above mentioned hives in less than a month after Mr. M. placed them in his orchard. This colony gave Mr. Mc 30 pounds the first year and 70 pounds the last year. This man is a very successful beekeeping farmer. He has 15 colonies.

One hundred cases we either interviewed or heard of on good authority. Of that 100, 80 percent failed through absolute ignorance. Of these 80, 20 began keeping bees without any knowledge except that they made honey, and ended in two or three years with the knowledge that bees neither make honey nor pay. One claimed that the birds caught all his bees. Seventeen allowed their hives to be washed away by high water, or burned by fire set out to clean the orchard of weeds, or destroyed by live stock. Two claimed that moth killed out their bees. Five lost part by swarming and sold the rest to "git rid of the pesky critters." Fourteen came into possession of bees through purchase of farms on which the bees were, or through inheritance. Each made the attempt but failed, and now have no bees or only a few straggling colonies, because, to use the expression of one of the parties, he didn't "jest git the hang of it."

The remaining 20 cases were mostly boys or women who started beekeeping because some one else did or they were in hopes of becoming suddenly rich, just like the lady in the story paper. Most of these discontinued the first year. One persisted four years. All of these were pure cases of failure because they knew nothing about bees.

Of the 20 percent, one-half may be considered successful. Eight of the ten so considered themselves. Two of those thought the most successful by their neighbors, did not believe themselves as such, as the sale of honey and excess of swarms did not equal the expense through a period of years.

Of the remaining ten, five are too new to mention, but the owners are well informed and hope to succeed. Three are keeping bees for fun. They take up every new fad and get few results. Two were very indefinite in their reports except that they considered themselves successful.

Now for some explanations and observations. Any one who has attempted to keep bees has been considered a beekeeper except where bees have been taken from cut bee-trees and taken home just to see if they would live through the winter. There seems to be a popular notion that bees hibernate, and if the winter is mild they will live through. Fifteen such swarms are being watched. Of the 15, one was taken from a cut bee-tree where it had been abandoned by the cutter, by a good beekeeper and is being fed.

A WASHOUT IN AUSTRALIA—AUSTRALIA ALPS IN THE DISTANCE
T. Rayment

Of these 100 parties, 70 still have bees, and 20 have over 10 colonies each; five recommend the keeping of a number of colonies; ten that from two to five colonies are profitable on every farm; twenty that bees are for the specialist, and a nuisance for the common man. About 3 percent had heard of bee disease, and one party had seen it.

To sum up the causes of failure it was becase the would-be beekeeper did not know of the whys and hows of the bee trade. One did not know how to buy supplies, another how to handle the swarms, another how to sell honey, another where to place the hive, and so forth. All were *not* inclined to study the subject, for everybody has sense enough to keep bees. All those that have succeeded are men who have studied the cause of former failure and keep in tune with the bees and other bee-men, are enjoying their labor and the sweets thereof.

The lack of preparation was everywhere apparent. Those who were most successful were the most forehanded, and many a failure was caused by a lack of preparedness. If the materials are well cared for, the tools in their places, no time will be lost, no stings will have to be picked out; in fact, preparedness is the key to success in bee work. Let the slack time in winter be filled with preparation for next summer's work and not in theorizing on what we could do if we had 100 colonies of purest Italians in an eternal clover pasture or similar foolishness.

Albany, Mo.

Vaseline to Prevent Burr Combs—An Old Idea

BY ARTHUR C. MILLER.

In the Bee Journal for January, page 12, a Mr. Oettle is reported as suggesting the use of vaseline to prevent burr combs, and says that "all exposed parts of supers, etc., should be vaselined on the bottom edge."

As far back as the early eighties, James Heddon mentioned the use of tallow for such purpose, and if memory serves me truly the use of a grease of some sort to prevent sticking by propolis dates back over a hundred years, though at the moment I cannot quote the author and place.

For a season I used tallow thus, and particularly on the edges of the end-bars of my closed-end frames, but I early discovered that there were worse evils than the sticking together of hive parts. Today I stop and scrape the edge of an end-bar at some time greased or send into the shop for cleaning, a super or other article at some time treated to a dose of anti-stick.

It is exceedingly disconcerting to have a previously decorous and well-ordered super go sliding off onto the ground at the slightest touch of hand or breeze, as the greased ones will sometimes do on a nice hot day. The grease and the propolis mix and make a very good lubricant when the temperature is up.

Another drawback to the use of grease is the daubing of one's hands, tools, smoker, etc., until nothing can be held securely. There are some things much worse than propolis and burr combs. An annual "clean up" keeps the former within bounds, and a change of queen will eliminate the latter.

One of the advantages of a library of old bee books is the knowledge to be gained of the practices of those who preceded us, thus either saving us useless experiments or furnishing us with some good or forgotten method or telling us the true originator of some "modern" usage.

Providence, R. I.

Queen-Rearing—Combination Method

BY J. E. HAND.

The queen is the mainspring of the existence of the colony, and the pivotal point of successful beekeeping; requeening to prevent swarming is rapidly gaining favor, therefore, the knowledge how to rear good queens is a necessary qualification of a competent beekeeper, without which he is not a complete master of his profession. The methods of queen-rearing in vogue today are largely modifications of methods introduced by G. M. Doolittle and Henry Alley a quarter century ago. Since space forbids a specific definition of these methods, suffice it to say, "in rearing queens for home use when simplicity of equipment and manipulation are important factors, a combination of the two methods mentioned has its peculiar advantages."

THIS IS QUEEN-REARING TIME IN THE SOUTH
A batch of queen-cells ready for nuclei, in the apiary of Grant Anderson, of Texas

The equipment consists of a brood-frame in which removable cell-bars are fitted parallel with the top-bar, and 1½ inches apart. Place a clean empty comb in the colony having the breeding queen and examine it daily. When it is well filled with eggs remove the queen and combs from a strong colony, leaving two combs with honey and one with brood. Cage the queen, shake the bees onto the running-board, place the caged queen and beeless brood in the top story of a strong colony, above a queen-excluder, and proceed as follows: Remove the comb containing eggs from the breeding colony, slice it into strips lengthwise, with two rows on each strip. Shave the cells from one side of said strips down to the septum, fasten said strips to the cell bars with melted wax. Crush the eggs in alternating cells, leaving the cells containing eggs alternating and zigzagging in the rows, and place the bars in position in the frames.

This frame containing strips of prepared worker-cells containing eggs, is placed in position in the queenless colony, between the two combs of honey, after removing the frame of brood. This sudden relief from hopeless queenlessness is hailed with great rejoicing, and the queen-rearing impulse is developed to the highest pitch. The nurses recently deprived of their numerous nurselings, will have their stomachs full of chyme, the cells containing eggs will be enlarged and the tiny larvæ will be treated to a superabundance of food as soon as they emerge from the egg. If no nectar is available queen-rearing colonies should be fed a pint of syrup daily to rear these queens.

There are good reasons, however, why these queenless colonies should not be allowed to finish the cells, (1) there are too many for one colony to finish if the best queens are wanted. (2) The absence of nurselings will cause a decrease in the secretion of chyme by the nurses, and it is imperative to get as many cells started as possible before the secretion of chyme reaches the minimum; therefore, queenless colonies are employed to start cells which are finished by queenright colonies. As soon as a batch of prepared cells have become well started and liberally supplied with food the frame is removed and another frame of prepared cells given, never allowing a queenless colony to start more than three batches, for reasons just given. The queen and brood are then returned, and the short period of queenlessness will not cripple the efficiency of the colony.

Auxiliary queenright colonies are prepared to finish embryo queen-cells in the following manner: The strongest colonies are selected and the queen limited to the lower story by a queen-excluder, with the most of the brood in the upper story. In the center of the upper story we place a frame having a bar with 15 embryo queen-cells attached. When these are finished another batch is given; this may be repeated so long as warm weather continues.

This method is simple and practical, and will produce high quality queens. It has been ascertained that the food given to all larvæ during the first three days of their life is the same whether said larva is cradled in the gilded cell of royalty or in the humble cell of a common worker, also that during these days of grace a larva in a worker-cell is given more food than it can consume; therefore, to all external appearances it could not fare better if hatched in a queen-cell; therefore, it is claimed that if a larva less than three days old is grafted from a worker-cell into an artificial queen-cell it will produce just as good queens as though the larva had hatched in the queen-cell.

At first sight this seems like sound logic, but there is an abnormal side to the grafting problem, that cannot be ignored. Under *natural* conditions a queen-cell containing a larva three days old is a perfect queen-cell in form and feature, and is nearly full size; therefore, bees are not pleased with three-days old larva in an open mouth wax-cup bearing little resemblance to a queen-cell with a royal larva at any age, and such a poor counterfeiter is viewed with disfavor and robbed of the food so skilfully (?) provided by the grafter, and the neglected larva is left with no visible means to sustain life until such time as the bees see fit to accept the intruders. On an average, half of the grafted larvæ perish outright from starvation and neglect, and certainly the survivors are not benefitted by their period of semi-starvation. The weak point in grafting is the period of fasting immediately following, at a time when the royal larva should be floating in a superabundance of food. Bees are more competent to select larvæ of the proper age to rear good queens, than the most expert grafter.

Birmingham, Ohio.

Certain Hive Fixtures

BY F. GREINER.

To practice economy in bee-fixtures at the expense of efficiency or neatness is a poor way to save or reduce expenses. I am afraid many of us are making mistakes along this line, some here, others there. For instance, the use of No. 2 sections cannot be generally recommended. Perhaps they may be admissible when honey is to be cartoned in sealed enclosures. I know of beekeepers who use old stained, yes, even dirty boxes of previous years use. I have found them time after time in country stores. How bad they look! How much better a clean white box of honey appears by their side!

One of the things of great importance in the production of comb honey is that we produce honey which does not leak. Any fixture producing or accomplishing this object is to be preferred even if it should cost a little more than the one having a tendency in the opposite direction.

For half a life time I have used differently constructed section supers alongside with another; not one kind one year, another kind another year; no, I tested them in the same seasons, in the same yards; even different supers on the same hive at the same time, and, while I have found several different supers to give reasonably good results, nothing has given me the satisfaction that a real wide-frame super affords. This, however, is not what I started out to say. I intend to confine myself to the greater detail, the separator; for whatever the style of super selected might be, the divider or separator remains the same *almost in all* cases. I am referring here to the wire-screen separator and the old tin or plain metal separator, otherwise the wood separator has long become the popular fixture.

It is all right even from the standpoint of the bee which does not take as kindly to metal as wood. The latter is more congenial to the nature of the bee because of its being a better non-conductor of heat and cold than metal is, the material the bee has adapted itself to during untold unknown ages. This wooden separator has from time to time been changed. Some have used a simple plain thin board and are continuing its use; others have perforated it, some cleated it, and still others have made a cleated fence. As long as a plain board was used all went well providing same was of proper width. I have used them as wide as the section was deep, and thus produced perfect non-leaking honey combs, but in this case the sections had a deep beeway. When the beeway is only ⅛ of an inch deep as in case of the no-beeway section when the thickness of the cleat represents the beeway, the separator must be narrower than the section is deep by ½ inch in order to give the bees free access to the sections.

When first using separators we were not so very particular about this matter, and some we made were about ¾ inch narrower than the outside dimensions of the boxes. The result was that the cells in the lower row as well as those in the upper row were drawn out and extended beyond the wood, necessitating trimming them down before crating, producing a leaky mess. It has been a dear lesson to us to find that separators should not be perceptibly less than 4½ inches for the 4x5 tall section. When we adopted fences the tendency to produce leaky section honey was also increased in as much as the bees sometimes start little legs from the edges of the little fence boards to the face of the combs; besides the honey produced with fences has not unfrequently a washboard appearance, particularly so when they have been in use for a few years. For these reasons I prefer the solid smooth board as a divider to the fence or even the perforated separator. The smoother the surface of the separator the surer we are of good results.

The cleat was added to the separator in order that we might use no-beeway sections. It was a delicate matter to decide what the width of this cleat should be. They were tried quite wide, ¾ and ⅞ of an inch, I think. I have them in use today. Finally the other extreme was adopted, viz: ¼ inch wide. Many thousand fences with these narrow cleats are found in the bee yards of today. Do they give satisfaction? What do we find anyway? In good honey seasons, when clover and other blossoms yield nectar profusely, and when the combs are sealed clear to the wood, as it seems desirable, the sealing becomes attached along the edges where the cleat is, not merely to the wood of the section, but also quite often to the cleat, too. When the filled section is removed from the holder this capping is torn loose and we have a bad leak. When the wide cleat is used the bees respect it and build around it, never attaching the capping to it.

The surface of the comb shows a slight depression to match the cleat. It might appear as though the edge was beveled off, which is not nearly as much of a disadvantage as the effect the narrow cleat produces. This disadvantage, this depression of beveling may be reduced to a minimum by reducing the width of the cleat, but we must not go beyond a certain limit. A cleat 9-16 inch wide gives good result and at the present I consider that width the limit. Possibly the ½-inch cleat is safe to use, but this I do not know; we will do more experimenting on this point, for we want the cleat as narrow as possible. I have decided to drop the beeway section entirely, and I have been asked, "Why use the no-beeway section at all?"

Briefly I will answer this question: "On account of economy." We save time in cleaning or scraping the sections when filled; we save money when buying the sections; we save one-seventh of the shipping-cases. There is no difficulty in handling honey in no-beeway sections, not in practice anyway.

Naples, N. Y.

Manipulation of Bees

BY L. HASEMAN.

(*For beginners.*)

To the beginning beekeeper, his first attempt to open the hive and handle the combs and bees may be beset with some difficulties, but in time this becomes the most fascinating part of beekeeping. He must study the bees, their habits, nature, likes and dislikes, and then accustom himself to their ways. The honeybee is not a vicious creature, and if given anything like the consideration it deserves it will not fight.

While handling bees, avoid jarring them or making any quick nervous motions. These two mistakes will start trouble in any bee colony. Always wear a veil to protect the face, and use cool smoke sparingly at the entrance and under the cover as it is being gently raised. Use smoke to induce the workers to fill their stomachs with honey, after which they are less likely to sting. Avoid pinching bees between your fingers, as they resent such careless treatment. For best results select the warm part of the day when the workers are actively gathering nectar or pollen, for at such times there are fewer bees in the hive, and those present are more docile. Never open the brood-chamber when the weather is cold, if it can be avoided, for you are apt to chill the queen and the brood.

These are few of the do's and don'ts which the beginner beekeeper in particular should keep in mind. A little careful study of the bee and its life and habits, and a little effort to adjust one's actions to those of the bees will soon make beekeeping both an interesting pursuit and one of value to those who are willing to work and learn. Every farmer could produce his own supply of honey by keeping and properly caring for a few colonies of bees.

SELLING HONEY.

Honey is a product of the farm which will practically sell itself if it is properly prepared for the market. The marketing of a small surplus is a simple matter. Let your neighbors know you have the pure unadulterated article and they will be glad to relieve you of your surplus. The marketing of a large crop may not be so simple, as you may have more than is needed for your immediate neighborhood or city market. For disposing of large surpluses, advertising in newspapers and otherwise will increase the demand from cities and from a large country district. One Missouri beekeeper, this season, had 30,000 pounds of honey which he marketed largely in his own county, and he says he could market much more if he had more good white clover honey. White clover honey is our most important honey crop, and it usually sells more easily than the darker honey.

Columbia, Mo.

Results of Apiary Inspection

BY E. F. PHILLIPS.

(This is the second of the papers read at the New York meeting of officials in charge of beekeeping. Mr. Pellett's paper, "Problems of Bee Inspection," appeared in the March issue.)

THE inspection of apiaries in the various States is unfortunately conducted according to many different systems, and in some cases with little apparent system. This work cannot be cast in a mold, because of the wide divergence of conditions in the various beekeeping regions of the United States, but it would seem possible to standardize the work to some extent by discussions in this association and elsewhere. To show the divergence more clearly, some of the differences in plans may be mentioned. In some States it is the policy to do intensive work by attempting to visit and advise all the beekeepers in a locality before the inspector leaves; in other cases inspection is made only on request, and only a few beekeepers are visited on each trip from the central office. In some cases emphasis is placed on work with the individual beekeeper; in other States meetings and demonstrations are held to reach a large number of beekeepers. In some States the supervising officer has a bird's-eye view of the situation throughout the State, made possible by adequate records and maps; in other instances the inspector has no such efficient records and wanders more or less aimlessly about, helping wherever he can but without a broad outlook. To obviate some of the grosser errors, the Bureau of Entomology has advised supervision of the work by an already existing office, not only to save administration expense, but especially to make the work constructive, comprehensive and efficient. The history of inspection proves conclusively the advantage of such a system, and shows the relative inefficiency of an independent inspector.

The title of the present paper indicates a desire to know whether the apiary inspection is profitable. At the request of beekeepers, the various States are spending thousands of dollars annually in this work. It has been in operation on an ever increasing scale since the first law was passed in Wisconsin in 1897, and enuogh experience is available to warrant the demand for a showing of results.

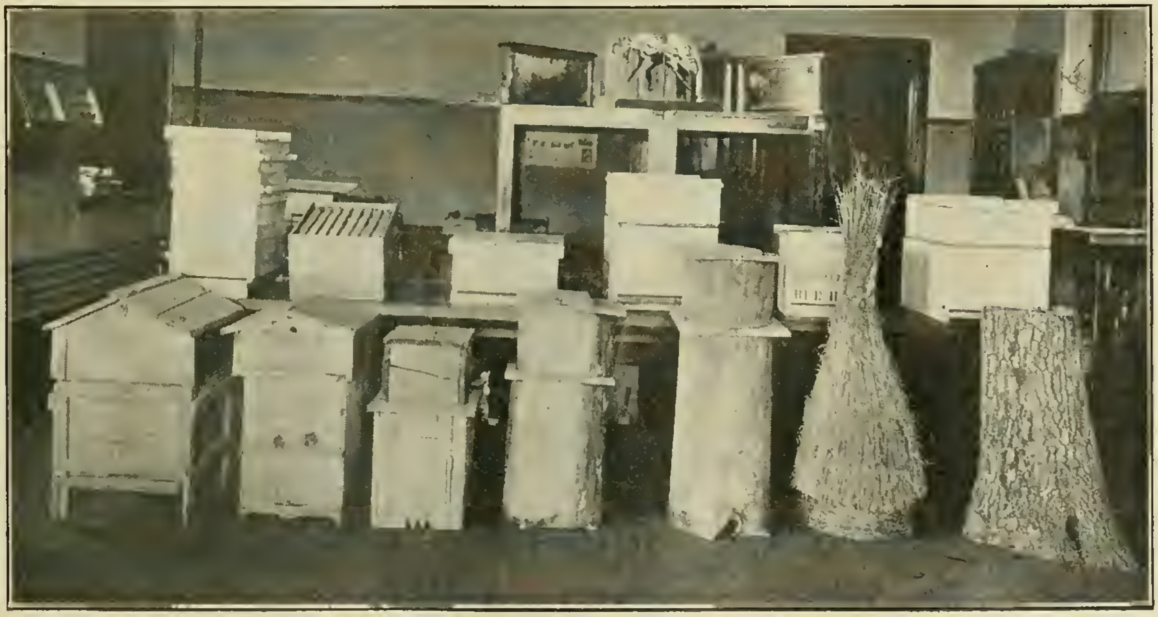
If conclusions are based on observations of a general character, one must believe that inspection is a decided benefit. Even in those States where there is little or no system, and where the most careless work is done, we find individual beekeepers aided to better beekeeping and enabled to combat disease with success. The making of one good beekeeper in a country may result ultimately in greatly increased wealth to the State, so that one cannot easily measure the economic value of such work. In spite of valid criticisms and there is abundant room for criticism in various States, we must conclude from such an examination that apiary inspection is economically sound and that the expenditure is warranted.

But so far the general approbation of the work has been based on just such general observations, without analyzing the situation carefully. It is now well after 20 years of trial to examine at least some of the available data to make the criticism more valuable. Such an examination cannot be made comparative because of the divergent systems just mentioned and often because of lack of available records. It is entirely just to conclude that where intelligible records are lacking the work is least valuable. To analyze all the available data is an enormous task, which cannot be undertaken at present, but a few specimens may stimulate the administrative offices in this work to apply this test, and it is hoped that the analyses will be published. These results should be announced even though the results are not all that might be desired, and if possible the results should be interpreted. This is the type of comparison and tabulation which the author recommended to this section at the annual meeting in 1915.

In the Mohawk Valley, New York, European foulbrood broke out in 1894, but it was not until 1899 that apiary inspection was established, as a result of the efforts of the organized beekeepers. The inspectors made an effort to determine the loss in colonies actually destroyed by disease, and while this record is probably incomplete, they found that colonies valued at $39,487 were reported lost. In 1899 (the first year of inspection) and successive years to 1904, the loss of colonies that died was given in the 1904 report as follows:

1895–1899	$39,487
1899	25,420
1900	20,289
1901	10,853
1902	5,860
1903	4,741
1904	2,220

When we consider the fact that in



THE EVOLUTION OF THE BEEHIVE EXHIBIT AT COLUMBIA, MO., IN JANUARY—Missouri Apicultural Society

1900 diseased colonies numbering 7253 were found (valued at perhaps $40,000), it is evident that the disease was spreading with great rapidity, and the State of New York made a good investment in establishing inspection whereby the percentage of diseased colonies was forced down from 23.9 in 1900 to 3.6 in 1905. About that time other outbreaks occurred, but the percent of colonies diseased has remained low.

Perhaps a better but less definite indication of the way in which, through inspection and education, the epidemic has been turned to the advantage of the beekeepers is in a comparison of past and present conditions in the Mohawk Valley. It appears that before the outbreak of European foulbrood there were comparatively few extensive beekeepers in the valley and many uninformed and indifferent small holders. No inspection or educational system yet devised can save the careless bee-keeper, and it is unsafe to attempt too much along that line, but through the efforts of the inspectors and other educational sources, the careful beekeepers and those who would make an effort to clean up the disease were instructed in the diagnosis and treatment, so that today they have little fear of European foulbrood. There are probably fewer beekeepers than formerly, but undoubtedly there are more colonies of bees and the average annual crop is larger than before the epidemic. The epidemic has thus been turned to an actual benefit to the industry through inspection.

In northwestern Indiana, European foulbrood is prevalent, and probably has been present for many years. In the eastern portion of the State, American foulbrood is abundant, and has caused enormous losses. On a brief trip of inspection, which the author took with Mr. George S. Demuth, then chief apiary inspector, but now in the Bureau of Entomology, several apiaries in the European foulbrood territory were found in which every colony was diseased.

In 1909 apiary inspection was instituted in Indiana under the supervision of the State Entomologist. Of the 6036 colonies examined that year 23.7 percent were diseased, and in Porter county 66.5 percent of all colonies inspected had European foulbrood. The highest record for the prevalence of American foulbrood so far recorded is for Randolph Co., Ind., in 1910, where 83.5 percent of the 3000 colonies examined were diseased or dead.

In this State, not only is the percentage of diseased colonies being reduced but the beekeepers are finding out what their trouble actually is, and beekeeping conditions are rapidly improving. It will take strenuous and continued inspection and encouragement to put the business on the footing which it should occupy, but the short time so far spent in the work shows that here, too, the epidemics may ultimately be instrumental in making better beekeepers and thereby be an indirect benefit. The data are not at hand, but Mr. D. W. Erbaugh is responsible for the statement that at present American foulbrood is scarce and the beekeepers in that territory are increasing their apiaries and finding beekeeping profitable. This is the most striking result of the Indiana inspection, even though no work was done there between 1910 and 1916.

Through the courtesy of Mr. E. G. Carr, of the New Jersey inspection service, I am able to give data concerning the percentage of infection in Salem, Cumberland and Cape May counties, N. J., 1913 and 1915.

The Result of Good Beekeepng in Maine—Home of O. B. Griffin

In this territory in 1913, there was European foulbrood in 30.2 percent of all apiaries inspected, and American foulbrood in 3.8 percent. In 1915 no American foulbrood is recorded, and European foulbrood was found in 25.9 percent of the apiaries. Of course, the percent of apiaries showing the disease cannot be decreased as rapidly as the percent of infected colonies. During the two years the number of colonies increased from 836 to 1136, a gain of 35 percent, which is the true test of efficiency. The plan in New Jersey is to cover a county as completely as possible before leaving it.

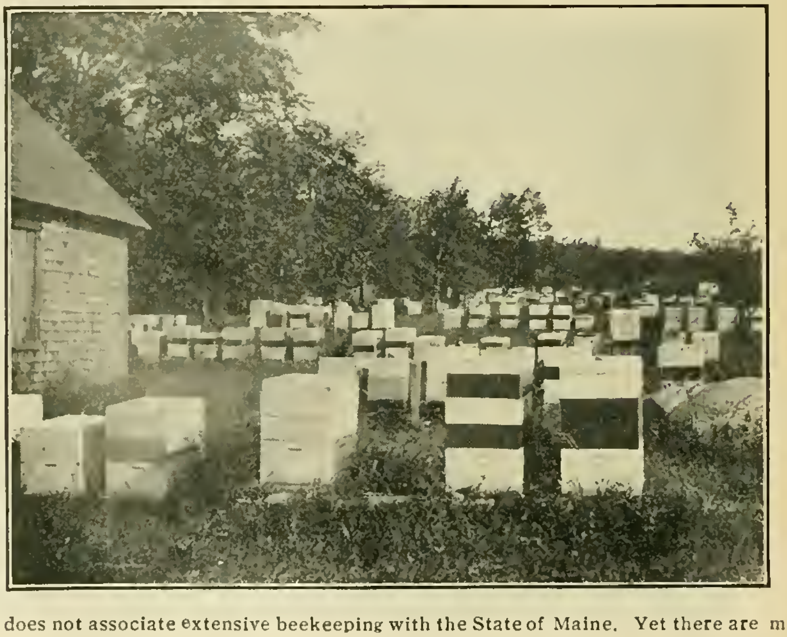
In Connecticut, in 1910, there were inspected 1595 colonies, of which 49.6 percent were diseased, and disease was found in 76 percent of the apiaries. Without giving the data for the intervening years, it may simply be recorded that the records for 1916 show 3898 colonies inspected, of which 7.05 percent showed European foulbrood, and 0.15 percent showed American foulbrood. European foulbrood was found in 18.8 percent of the apiaries and American foulbrood in 1.07 percent.

Obviously changes in inspection policy and the routine methods of the work will influence these figures. For example, in Connecticut, inspection was formerly done only on complaint, and this restriction has been removed. However, from the figure given for these four States there can be no doubt of the economic value of the apiary inspection.

Every effort should be made to improve the inspection service, and this can perhaps best be done by publication of the results of inspection. The inspection must also be improved by discontinuing, so far as possible, the payment of inspectors only for days spent in the work, which too often means for days when they are not otherwise occupied.

The title chosen for this paper may be assumed to be covered by the type of data given, but at this opportunity it may be well to enlarge the discussion by way of pointing out a method of overcoming some present defects. As is well known, the Bureau of Entomology has during the year begun extension work in beekeeping, in cooperation with the regular extension offices. So far this work is confined to the southern States. When it is considered that the value of inspection comes chiefly from the efficiency of the educational feature of the work, it will be seen that, in a sense, extension work is but a continuation of what has been done for years in some States. However, an extension worker is freed from the odium of police power, which is at times a detriment to the inspection work.

Since in perhaps half the States the apiary inspection is below its possible efficiency, and, since without unwarranted interference this cannot well be changed, except by the beekeepers of the State who often fail to recognize the poor quality of the work, it is pertinent to suggest that extension work should replace at least the incompetent


One does not associate extensive beekeeping with the State of Maine. Yet there are many apiaries there. The above is one of the apiaries of O. B. Griffin, of Caribou

inspection, or, if it is possible, supplement and stimulate it.

The future of the beekeeping industry depends in no small measure on the creation of professional beekeepers. Apiary inspection was instituted chiefly to save what already existed and was not conceived as a creative agency. If inspection is to assist in giving the much needed impetus to the industry, every apiary inspector should emphasize the extension feature of his work, so far as his authority will permit, and in addition should encourage and support the extension work which openly assumes the task so long carried unannounced by the inspection. By enlarging the extension work to the fullest extent, we may expect still more satisfying results than those here given.

Washington, D. C.

How Products of the Hive May Be Increased

BY J. E. CRANE.

It has been often observed that one hive of bees is much more productive than another, but the reason is not obvious. It is the purpose of this brief article to point out two or three reasons why this may come about. The first and most usual reason is a large population at the right season to gather the surplus. We notice in the "great war" now in progress, the value of large armies, and the advantage they have over the smaller bodies of men. The same is true in the work of the hive. The more numerous the field workers, other things being equal, the greater the yield. So we may set it down as a matter of prime importance to have a prolific queen. But there are other things of as much or even greater importance, the longevity or endurance of the workers is one of them. It is of little value to rear a large number if they die early while in the height of their labors.

We notice a great difference in the age reached by different families of mankind. Some drop out at 65 or 70, while others live on, almost every member to 80 or more years, hale and hearty. The same law appears to hold true in regard to the age of bees, as is easily shown by introducing an Italian queen into colonies of black bees; or by noticing the time a queenless colony will survive after they have lost their queen. It is generally believed among the more intelligent beekeepers that the average age of worker-bees during the summer months is about six weeks; and the time they work in the field is not far from four weeks. If workers of one colony of bees can gather honey for four weeks while the longer lived bees of another colony can go five weeks, we can readily see why the latter should prove the more productive. If the first colony should produce 60 pounds of surplus, the hive of longer lived bees should produce 75 or even more pounds of surplus honey.

There is another factor of prime importance in the discussion of this subject. It is the constitutional vigor with which the bees of a colony are endowed. It may even include longevity. Any person who has had much experience with domestic animals, and especially horses, must have noticed the great difference in their constitutional vigor and ability to stand up under adverse conditions. One horse may be driven a dozen miles and back, and when you turn it out it will kick up its heels as though it had thoroughly enjoyed the whole drive, while another after having been driven half the distance appears worn out. There is as much difference in the natural vigor of different colonies of bees as in other animal life, perhaps even more. Some colonies will go down in spite of our best endeavors to build them up, while others in apparently no better condition respond and build up with surprising rapidity. This may account for the greater distance some bees fly in search of nectar, and also for the greater productiveness of one hive over another. If the bees of one hive fly over an area whose diameter is three miles, while bees of a more vigorous colony fly over a diameter of four miles their pasturage is nearly doubled, and sometimes the surplus of their hives also. Bees often fly even farther. A friend of the writer introduced Italian bees into his apiary. There was a field of alsike clover 2½ miles from his yard. He went to see if his new breed of bees would go so far for honey, and much to his surprise found his yellow bees in great abundance; and they were several times as numerous as the black bees of a neighbor whose bees were located only a mile from the clover. The greater vigor of Italian bees accounts in a large measure for their popularity.

It is well for the apiarist to have these points in mind if he would increase the productiveness of his bees. Avoid increase from the weaker hives and plan to get the new swarms, or at least the young queens, or as many of them as possible from the strongest and most vigorous colonies, and those producing the largest amount of surplus honey.

Middlebury, Vt.

A CRANE APIARY IN VERMONT
Losses in the Crane apiaries the past winter under two percent

Translations from a Swiss Bee Paper

BY C. W. AEPPLER.

In "Der Schweizerischen Bienen-Zeitung" (Swiss Bee Journal) for December, 1916. I find the following of interest:

Honey and wax have increased in price in Germany, but in far greater proportion than other food stuffs. It is thought that the reason for the increased price of honey is the lack of cultivated plants yielding nectar. All available land has been put into potatoes, grain, and the like, in order to meet the demands of the war, leaving only honey plants that are growing wild for the bees to secure nectar from. Even the parks, flower gardens and lawns have been plowed up and put into potatoes.

Honey is now selling for six marks per kilo in Germany, which if given in price per pound would be approximately 68 cents per pound. Wax is selling for seven marks and above per kilo, which if given in price per pound is approximately 76 cents per pound. Before the war, honey was selling for 30 to 35 cents per pound, and it is surprising that it has only doubled in price in that country. Before the war most articles of food were cheaper in Germany than in America, yet honey was selling for about three times the price that we receive.

Before the Swiss Science Association in November, 1916, Prof. Goldi presented his new theory on the sex determination of the honeybee. His theory is as follows: All eggs that are laid in drone-cells by the queen are fertilized the same as all eggs that are laid by her in worker-cells. However, after the eggs have been laid by the queen in drone-cells, the workers sterilize them.

This is the third hypothesis that has been set forth on sex determination in the case of the honeybee, and may be said to lie about midway between the hypothesis of Dzierzon and Von Dickel.

Prof. Goldi bases his theory on observations that he made with certain species of ants in Peru, South America.

Madison, Wis.

Long Distance Beekeeping

BY FRANK C. PELLETT.

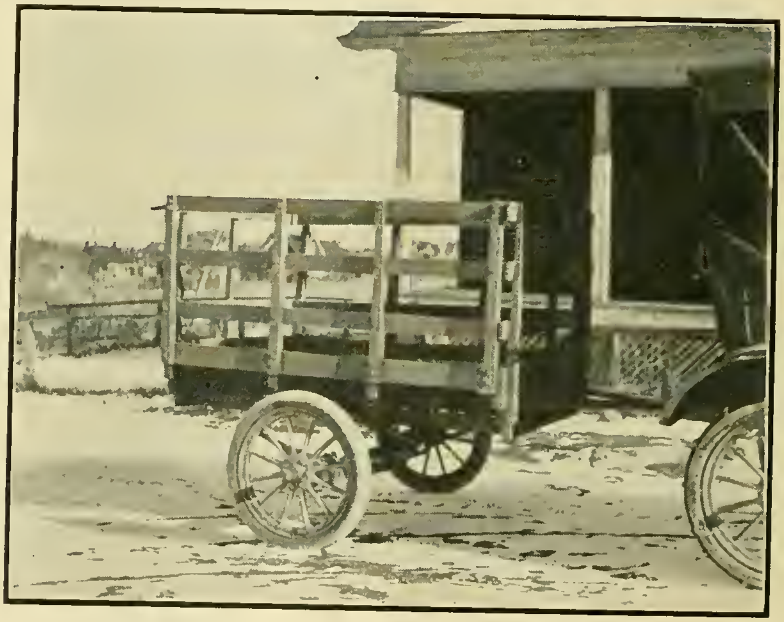
There are hundreds of men who keep bees as a side line and with no very special importance placed on the income from the apiary. There are a few side line beemen whose colonies are numbered by hundreds. For novelty of management and profitable returns we take off our hats to I. J. Stringham, of New York city. Stringham runs a supply business in the city which requires more or less of his attention every week in the year. With a business in the largest city in the world, one would hardly expect to find the owner a very extensive beekeeper. While beekeeping is an exacting business, in that there are a few essential operations which must be attended to at the proper time, it has certainly been demonstrated that the man who has a good working system has more freedom than with any other business giving as large returns on the capital and labor invested.

Although Mr. Stringham is engaged in business in the city, he lives in a suburban community on Long Island, and goes back and forth to his work daily. One small apiary is kept at his home. Three others are kept on the island within easy reach by automobile. He has three others along the Hudson and two more still farther north. His most distant apiaries in New York state are 210 miles apart. In spite of the long distance from home at which the apiaries are located, four of them are run for comb-honey successfully. Not being content with a string of apiaries 200 miles long, the owner has one in South Carolina which is operated with one visit each year.

Long distance beekeeping is an art. The few visits that are made must be timed so as to reach the apiary just ahead of a crisis. Every operation must be planned to make the most of the short time available for work in each yard, to get a maximum of result with a minimum of labor. Of his ten apiaries Mr. Stringham cares for eight personally, while the other two are operated on shares by the men on whose farms they are located.

The South Carolina apiary which is operated with one visit a year is run for bees as well as for honey. Each colony has three stories of extracting combs to which the bees have access through the entire year. The one visit is made at the beginning of the swarming season and most of the bees from every colony are shaken into packages for shipping north for the purpose of making increase, strengthening weak colonies or for sale in pound packages. In this way several hundred pounds of bees are secured each year. Being so much further south than the New York yards the colonies are strong at a time when bees are just beginning to build up in the northern states. After the bees are removed all surplus honey that may have been stored after the visit of the previous year is extracted. When he is ready to leave there is an abundance of room, and since the working force has been removed, there will not be further danger of swarming. The bees usually build up again in time for the fall flow and store a considerable quantity of honey which will be extracted at the time of the next spring visit. Even with this let alone plan the bees store enough honey to pay expenses of the long journey south and shipping the bees north again, so that the owner nets about five pounds of bees per colony, which makes it a very profitable apiary.

Six or seven visits each year are paid to the New York apiaries. A light automobile makes it possible to reach any of these apiaries with a load of supers within a few hours' time. It is only possible to care for so many in this manner, in addition to other business, by having all comb-honey supers ready in advance. Sections are folded and filled with foundation during the winter months. When the comb-honey apiaries are visited during the honey flow, carriers full of empty sections are taken to the yard, the filled sections taken from the hives and exchanged for the empty ones, and the return trip is made with the carrier full of finished sections. Every possible short cut is practiced.



TRAILER OF WESLEY FOSTER ATTACHED TO FORD AUTOMOBILE

Outyards for comb-honey production are not common, because of the great difficulty of controlling swarming under such conditions. When the first signs of preparation for swarming are noticed in the Stringham yards, a queen excluder is placed between the bottom-board and the body of each hive. This prevents the escape of the queens during the absence of the owner. Neighbors who have hived swarms issuing from these apiaries have been much mystified because they return to the parent colonies instead of remaining in the new hives or boxes in which they are caught. Two weeks after the excluders are placed, every colony which has queencells is shaken and in due time the brood is returned to it. This plan effectively disposes of the swarming problem in most instances. An occasional swarm will be lost, but the number is not large.

The colonies run for extracted honey are given the usual attention, since swarming is a much less serious problem with the extracted honey system. With more than 700 colonies managed in this way, the net returns have averaged better than $5 per colony for a series of years. Mr. Stringham is not new at the business, having kept bees on a commercial scale for 25 years. Locust is an important source of surplus to the bees on Long Island. The flow usually lasts from five to seven days. Often 30 to 40 pounds of surplus per colony is stored from this source alone. The flow can be depended upon in this locality four years in five.

In order to succeed with a system like this, one must be thoroughly familiar with the essentials of honey production, for a novice would almost certainly fail with such a plan. The returns which Mr. Stringham has secured from so many bees over a long series of years effectually demonstrate that it is not necessary to be forever fooling with the bees in order to get results. If the operator knows what to do and when to do it, the less fussing the rest of the year the better.

As a means of advertising, Mr. Stringham exhibits at the Madison Square Garden Poultry Show in New York, and at the Boston Poultry Show. These are the two largest poultry shows in America, and thousands of people are in daily attendance. He tried exhibiting at many of the smaller shows, but finally decided to appear at only the two best ones, where he could reach the largest possible number of people. Booth space at the New York show costs $75, so he has little competition in the way of rival exhibits. It is an advertising proposition entirely, since no prizes are offered for anything aside from poultry. It was at the New York show that I met Mr. Stringham The first time I passed through the big building I was attracted to the honey exhibit, which was very nicely arranged. There was a constant stream of visitors to the honey booth, many of whom bought honey to carry away with them, and many others left orders for later delivery. Since there was no other exhibit of bees and honey, most of the visitors to the show stopped to take a look. By such means a retail trade for a large amount of honey is established, which adds a substantial sum to the income from the apiaries.

Alsike Clover as a Honey Plant

BY C. H. PAMMEL.

At the recent meeting of the Iowa beekeepers in Des Moines, the writer made the statement that alsike clover was somewhat overestimated as a honey plant, at least so far as Iowa was concerned. It is not an important honey forage plant in Iowa. The acreage is relatively small. There are a great many spontaneous plants of it in Iowa, however. But there are much larger areas in Wisconsin, where the soil and climate are adapted to it. It is also perhaps a much more important honey plant in that region than with us. After my return home I looked up our records on its value as a honey plant. I find that it is not visited as frequently as sweet or white clover. The following field notes were made by Dr. L. A. Kenoyer. These notes will be of interest in view of the discussion in Des Moines:

TRIFOLIUM HYBRIDUM—ALSIKE CLOVER.

Date	Place	Weather	Honey bees	Other insects	Observer
6-16-14	Campus	Clear, cool SE	Fewer than on white	Numerous	Fazier
6-17	Street	" " "	Many	"	"
6-18	"	" warm 70 deg.	A few after 7:30		Munger
6-19	"	Cloudy, cool N	None		"
....	"	Moderate, S	Plentiful	Andrena plentiful	"
1915	Campus	Cool, wet summer	Bees rarely observed on alsike		Kenoyer

Although our observations indicate that alsike is less visited by bees than is white clover, its corollas are but slightly inferior to those of white clover in the amount of sugar contained.

The insect visitors are very similar in kind to those of white clover, flies and hemiptera being frequent.

Alsike differs from white clover in having ascending rather than prostrate stems, and in the generally more decided pink tint of the flowers which may be distinguished also by the absence of the purple spots at the sinuses of the calyx—these spots being characteristic of white clover.

Ames, Iowa.

[Alsike clover is found quite frequently growing in pastures in the East, New York and New England. It has become a volunteer there as white clover is with us. The beekeepers of the East and Canada secure much honey from it.—Editor.]

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Queen-Rearing

I want to know the best method of rearing queens for my own use. I live on the farm. I have had some experience with bees, but have never had any with queen-rearing.

I have five colonies in 10-frame hives, two in eight, and three in log hives. I want to transfer my bees in log hives and requeen them. My bees in the hives are 3-banded Italians, and those in the log hives are blacks. I left on a super full of honeydew and amber mixed. They had some honey in the brood-chamber, but I do not know whether they had enough to winter on. Did I do right?

[Mrs.] W. B. Robinson, Sr.
Defeated, Tenn.

So much depends upon the queen that it pays well to take a great deal of pains to rear the very best. At least up to the time when a queen-cell is sealed it should be in a strong colony, and the colony should be in the pink of condition, with abundance of honey coming in, so that the royal larvæ shall be lavishly fed. Don't try to rear queens too early. They are likely to be poor. Wait until the time when bees swarm naturally. Indeed, one of the best ways is to use what are called swarming-cells, that is the cells that are reared for swarming.

Decide which you think is your best queen, or at least one of the best, and and if its colony is not likely to swarm among the earliest, strengthen the colony by giving it brood and bees from other colonies. Then as soon as it swarms and you have hived the swarm you can divide into nuclei the brood and bees that are left in the old hive, giving each nucleus two or three frames of brood with adhering bees. Make sure that each nucleus has at least one queen-cell in the central part between the frames where there is no possible chance that it may be chilled. Generally you will find queen-cells on the edges of combs, but for your purpose that is not so well. If there is no cell where you want it, cut one out and put it there, giving preference to the larger cells and those with the deepest indentations. Fasten the cell on the comb with a hive-staple, or any staple with legs 1½ inches or so apart. Let one leg of the staple hug down upon the cell, and push the other end into the comb. In about two weeks look in your nucleus, and if all is going well you ought to find a young queen laying.

It was all right for the bees to have the honey left for them, except that in some cases, if not generally, honeydew is not the best for winter stores. But if the honey was in sections, although good for the bees the sections would not be good to use again.

A Beginner

Will you please give me some information on how to care for bees. I want to know enough to keep them.

Gravity, Iowa. Ethel V. Ray.

The care of bees is the same whether you desire to produce honey for market or for your own use, just as you would raise potatoes the same way whether you intend to eat them or sell them.

It is an impossibility in a single reply to tell all about the care of bees. There are, however, good books written purposely to give the instruction you desire, such as "Dadant's Langstroth" and Root's "A B C and X Y Z."

Perhaps you can hardly do better than to send $1.75 to Dadant & Sons, Hamilton, Ill., to get the American Bee Journal for a year and with it Dr. Miller's "Thousand Answers." This book contains the cream of the replies given by Dr. C. C. Miller during many years to all sorts of questions about bees, questions asked largely by beginners, yet many by those with experience, so that you will hardly fail to find in it the answer to any question that may come up in your work.

You may, however, not think it worth while to go to even that much expense. Well, then, about as soon as you see the first clover blossom, seeing you are in a white-clover region, put some kind of a box on your hive to contain the surplus honey; be on the lookout for swarms so as to hive them, take off the box as soon as the honey in it is sealed, and put on another box, and as soon as the bees stop gathering in the fall take off all boxes.

That is exceedingly meager and unsatisfactory, and it would still be meager and unsatisfactory if another page were added to it, or even a dozen pages. On the whole, the likelihood is that if you should make the small outlay suggested you might more than get it back in a single season with a single colony.

A Unique Institution

The School of Horticulture for Women, located at Ambler, Penn., is unlike any other institution in this country. A two-year course is offered and all students entering are required to take a medical examination to show physical fitness as well as suitable mental preparation. The course is said to be too strenuous for delicate women. As will be seen from the picture of the class in beekeeping, the students are given practical work in the subjects which they are taught. Two hours of practical work to one of books is the rule throughout the course.

The work includes floriculture and greenhouse management, landscape gardening, fruit growing, vegetable gardening, poultry keeping, beekeeping, canning and preserving. In many respects the work resembles that offered in the Agricultural Colleges, excepting that here the students have practical experience in the apiary, greenhouse or garden through the entire year. The jam kitchen is an interesting place where the products of the school farm are prepared for market. Fruits are made into jellies and preserves, and the honey is bottled for a special trade. While there are similar institutions in Europe, there is no other school in America offering this particular training for women.

Miss Elizabeth Leighton Lee, director of the school, says: "The object of the School of Horticulture is to give to educated women scientific instruction, combined with all necessary conditions for much actual practice; the course being planned to equip women with the theoretical and practical knowledge that will enable them to manage private and commercial gardens or orchards. Thorough training throughout the various seasons of the year eliminates the discouragements of costly inexperience, and fits a woman for a vocation that is healthful, attractive and remunerative." F. C. P.

One who has any proper conception of the subject cannot help being thrilled to think what it will mean to the country when schools of this kind become common—as they surely will. A woman who has been through a two-year course at Ambler need have little to fear in meeting life's struggle if she should be thrown upon her own resources.

Yet important as it is that those women who live lives of single blessedness shall be prepared to steer their lone barks, it is of vastly more consequence that married women shall do their part well, if for no other reason than because there are so many more of them. It is a great thing to be a *home-maker.* Lillian Russell, the noted opera-singer and actress, lately wrote in the Chicago Daily Herald:

"Women who are making good homes need not feel that their work is insignificant; they are engaged in the greatest work life offers. Their sisters may paint beautiful pictures, write wonderful stories or rise to exalted positions in business or the professions; but the home builder is, after all, the greatest producer of beauty and happiness. All else in life is in a large measure dependent upon her. Government may fall and religion may totter if she fails in her duties.

"Women who create beautiful homes can find time for other things; their lives need not be narrow. Many channels to success in other directions are open to them. They have a better chance to reach exalted positions in their communities and nations than the women who have never felt the wonderful exhilaration and inspiration of the home builder.

"Man may erect a building, but it takes a woman to make it a home. It is a woman that puts the wonderful sweetness in the word home. She is the creator of the beauty and happiness that convert a dwelling place into a home."

So let us rejoice that Ambler women are being prepared to make better homes, and that the vision is broad enough to include beekeeping as one of the things the home-maker may well know something about.

MISCELLANEOUS NEWS ITEMS

Suggestions for the Control of Foulbrood.—The following gleaned from the instruction given by B. F. Kindig, State Inspector of Michigan, is worthy of attention:

Very few colonies of bees *actually die* from foulbrood during the summer. The disease causes the colonies to become very weak, and they, therefore, store up very little food for winter. If they do not starve to death sooner, or are not killed by robbers, the first real cold weather usually kills them. These conditions cause many beekeepers to look upon the death of their bees as purely due to winter killing. In a large measure winter killing is due to disease.

From now on until late spring, every beekeeper should look upon the death of any colony with suspicion, watch the hives on warm days, and if the bees are flying from some hives and not from others, take the hive from which the bees are flying, inside of a building and there make an examination of the interior. If the colony is found to be dead or nearly so, do not again place the hive where it can be robbed, but suffocate the bees and close the hive securely. Any colony that is being robbed may be a source of disease, which disease may be carried to all the healthy colonies in the vicinity.

Any beekeeper who is not familiar with the appearance of combs in which disease is present should send a piece of the comb under suspicion. A box for mailing will be furnished, if desired. No charges are made for the examination of the comb. If disease is found to be present, specific directions for disposing of the combs, and for treating the disease in living colonies, will be sent to the person sending in the combs for examination.

If beekeepers will heed the above suggestions, it will prevent in large measure the further spread of foulbrood. E. F. PHILLIPS,
Bureau of Entomology, Washington, D. C.

◆

Ohio Beekeepers Meet.—At the meeting of the Ohio Beekeepers' Association the following officers were elected: President, Melville Hayes, Wilmington: Vice-president, Fred Leininger, Delphos; Secretary-Treasury, Ernest Kohn, Grover Hill.

A field meet will be held at Wilmington the latter part of August.

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Western Washington Meeting.—Success attended the annual convention of the Western Washington Beekeepers' Association held in Chehalis Feb. 9. Southwest Washington was well represented.

N. P. Welson, of Centralia, was elected President, and W. L. Cox, of Elma, was re-elected Secretary-Treasurer.

THE STUDENTS ARE GIVEN PRACTICAL INSTRUCTION IN THE SCHOOL OF HORTICULTURE

N. B. Coffman welcomed the delegates to the city and made a short talk on the bee business as a profitable enterprise.

Dr. J. T. Coleman, whose subject was "The Value of Bees to the Agriculturist," explained that the bee business required a great deal of painstaking work. He also pointed out that the little honeybee is the principal agent in cross-pollinating flowers. Dr. Coleman is part owner in a 48-acre pear orchard.

A. S. Cory made a talk on the "Commercial Value of Bees," and urged the beekeepers to improve their stock as well as their product.

W. L. Cox, of Elma, spoke on "Marketing Honey," of which he sells several tons each year, nearly all in his own county, direct to the grocers. He does all of his own delivering with a Ford car; he has a pennant across the wind shield reading, "Eat Honey." This pennant has led to the sale of several cases of honey.

J. W. Ware, the Experiment Station bee-man, addressed both afternoon and evening sessions. Mr. Ware is a beekeeper of many years experience, and gave those present the benefit of his successes as well as his failures.

W. L. Cox, *Sec.*

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The Arkansas Valley Beekeepers' Association will hold its spring field meet at Nickerson, Kan., May 12. Every effort will be made to make this meeting a good live one.

J. L. Pelham, *Sec.*

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Death of a Texas Beekeeper.—M. M. Faust, of Wilson Co., Tex., one of the best known beekeepers in the State, died in San Antonio Feb. 21, aged 80 years. He was born in Mississippi, and was for over 30 years identified with the bee business of Texas, having acted for many years as foulbrood inspector for Wilson county, and did more perhaps than any other man in the State to lead in the fight for the eradication of this scourge.

Mr. Faust was always a large beekeeper himself, and was among the first to adopt and advocate new methods of bee-culture. Early in the history of Texas beekeeping he imported and bred Italian queens and induced his neighbors to assist in driving out the inferior native races.

E. G. Lestourgeon.

The Late M. M. Faust, of Texas, with His Little Grandson.

◆

Toronto Field Day.—The 6th annual Field Day of the Toronto Beekeepers' Association will be held at Guelph on May 24. The object of these field days is to educate the beekeeper by practical demonstration in the apiary to better and improved methods of beekeeping. The Field Day demonstration for this purpose is ideal.

Under the splendid management of the Provincial Apiarist, the Ontario Agricultural College is taking the lead in things apicultural. It goes without saying that the program will be first-class. Mr. Pettit with wide experience in such matters is in charge of this department, and we are confident all who are fortunate enough to be present will go away delighted.

G. R. Chapman, *Pres.*
P. Temple, } *Sec'ies*
C. V. Clubb, }

◆

An Advertising Idea. — During the coming summer I shall try out this idea. I shall have some friend in another State to remail me a letter envelope addressed as follows:

BONNEY HONEY
Dr. Bonney—King Bee

The mail clerk supplying the right address will receive a can of Bonney honey as a free gift. Iowa.

That is all. Is it a good idea? Go thou and do likewise. Dr. Bonney.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
Dr. C. C. Miller, Marengo, Ill.
He does not answer bee-keeping questions by mail.

Trouble With Bee-Moth

How can I get rid of the bee-moth? Oklahoma.

Answer.—You will have no serious trouble with the bee-moth if you will keep Italian bees and have your colonies strong. Even blacks or hybrids, if strong, are not likely to be much troubled.

Unripened Honey

1. What causes honey to flow from the hive late in the fall and winter, and what can I do for it?

2. Which is better to use, the 8 or 10 frame hive? Minnesota.

Answers.—1. It often happens that moisture from the bees condenses on the walls of the hive and runs out at the entrances, and this may have been what you observed. It is possible, however, that there may have been some thin, unsealed honey that ran out of the cells. Try to have well ripened honey for winter, and see that hives are well packed.

2. In most cases the larger hive is the better.

Transferring Bees by the Pound—Bees' Wings Injured

1. I have 11 colonies, two are in old log gums, I want to take them out in the spring. My bees are mostly the leather-colored Italians. Would you advise transferring bees from old log gums before they swarm or after?

2. Would it be advisable to order bees by the pound in this part of the State, and will the 1-pound package increase to good colonies during the summer?

3. Just after bringing home a swarm of bees in an old log, some bees began to come out and fall down on the ground. Some would have both wings off while others would have one wing off; some with the ends of the wings off. The bees looked as if they had been scorched; they seemed to be healthy in every other way. What do you think the trouble was? Virginia.

Answers.—1. The tendency nowadays is to wait until they swarm, hive the swarm in a proper hive, set it on the old stand with the old hive close beside it, and 21 days later, when all worker-brood has emerged, break up the old hive.

2. Much depends upon what you can do in the way of buying near by in full colonies. If you can buy them for less than $5.00, that may be better than to get bees by the pound. If you have to send off, then buying by the pound is likely the best thing, preferably getting a queen with your pound. It's asking a good deal to have a pound build up to a strong colony, but if the year is favorable you may compass it. On the whole, however, it may pay full better to get a 2 pound package. It ought to build up more surely in a poorer season, and in a good season build up in less than half the time, and in a very good season it might give enough surplus to more than pay for the extra pound.

3. I should say they might have been scorched, if there was any chance for that; otherwise it might be that the larvæ of the bee-moth may have gnawed off their wings while they were in the cell.

Swarm Prevention—Ventilation

1. I now have five colonies and one good Italian queen. How would it work to wait until they are preparing to swarm, then kill the old queen and cut out all cells but one, fill that with royal jelly and put a larva from my best queen in it, and then keep all cells cut out but that one? Would that prevent swarming or would it leave them queenless too long?

2. Is it a good plan to put in one-inch blocks under the corners of hives in hot weather, leaving one-inch space all around, or would it be better to have an opening only in front?

3. Would it be a good idea to raise the cover about 1-16 inch all around?

4. I have five supers full of partly drawn combs and a little honey. Would it be a good plan to put them on in fruit bloom and leave them until the clover comes, or should I wait until the brood-frames are all filled? Subscriber.

Answers.—Your plan may work all right.

but you will need to watch closely or the bees will start cells in places you will miss. You will not need to fill a cell with royal jelly; merely pick out the larva and put in the other larva. It may be well for you to prepare several cells, for fear the bees destroy the larvæ, then before the cells are sealed destroy all but one of the accepted cells. No swarming ought to result; and the interim without a laying queen would be increased about ten days.

2. The opening all around gives better ventilation than the opening in front, but it is somewhat unpleasant to work at a hive where the bees can come out at the side.

3. Yes, only so small a space would in many places be filled with glue, especially late in the season.

4. It will be all right if the colonies are strong and the supers contain extracting combs, but not if they contain sections.

Bees and Other Pursuits—Bees in Buildings—Clover Seed

1. What crops or rural pursuits fit in with bee-culture without interfering with care of bees?
2. When a second story of building is used for bees *can the colonies be set about the room as when out-of-doors*, only facing windows, or must each have a separate outlet?
3. Is raising clover for seed a profitable and sure crop? What kinds should be sown, taking bees into the plan?
4. What kinds of annual bee-forage plants are best which yield a crop of its own?
5. How best to construct an inlet through building for bees? WISCONSIN.

ANSWERS.—1. Small fruits and poultry fit in well with bees.

2. Each colony must have its own outlet.

3. In some places it is, in some places not.

4. Sweet clover, alsike clover, and raspberries are among the best.

5. The simplest kind of a passage made with plain boards.

Miscellaneous

1. Is there any profit to be made in a strong colony of bees in a box-hive at 50 cents per colony, to unite with bees in patent hives?
2. Do you think beekeeping could be made a success in this country, as we have some white clover, goldenrod, white aster, black locust, Spanish-needle, and some few other nectar yielding flowers?
3. How much cheaper can a man produce extracted honey than comb? KENTUCKY.

ANSWERS.—1. I can hardly think of any case in which a strong colony of bees in a box-hive would not be a bargain at 50 cents, no matter which way you would use it.

2. Yes, indeed, I have no doubt you can make it a fine success.

3. Estimates vary. Some say you can produce twice as much extracted as comb with the same outlay, some say very little more. Generally, it is believed, that 50 percent more can be produced.

Division-Board—Linn Trees—Clover

1. What is the use of the division-board in the 8-frame hive?
2. Should it be put in the middle of the hive?
3. Are the linn trees very good honey trees?
4. How much honey will one tree yield?
5. Would sweet clover planted along the roads and ditches be much of a benefit to bees? IOWA.

ANSWERS.—1. The principal use of the dummy, sometimes called the division-board is to make it easier to lift out the frames.

2. It should be at one side of the hive, although in hot weather it works all right in the middle of the hive.

3. The linden or linn is the same as the basswood, one of the very best honey-trees that grow.

4. I don't know; a big ree yields more than a little one. I have seen it estimated that a large tree would yield all a strong colony could gather. I have my doubts.

5. Yes; it often blooms when little else is to be had, and is then of great value.

A Start With Nuclei

1. How can I put a two-frame nucleus with a queen into an empty hive?
2. Will it make a swarm large enough for a hive?
3. Where can I get a book on bees that would contain such information for the above question?
4. Would bees shipped from southern Texas do all right here?
5. Would a 2-pound package of bees with a queen be sufficient bees for an empty hive?
6. How should they be put in?
7. In running for comb honey, should each frame have a starter? NEBRASKA.

ANSWERS.—1. I simply lift the frames out of the nucleus hive and set them in the hive. A few bees are likely to remain in the nucleus hive, and these you can brush in front of the hive, or else set the nucleus hive in front of the hive and let the bees run in.

2. If the season is good enough, a 2-frame nucleus started sufficiently early ought to make a good colony for winter. In a poor season, hardly.

3. Send for prices on bee books to the Bee Journal. That is an encouraging question, for a man who has no book to guide him is likely to make a lot of rather expensive blunders in keeping bees. I am not anxious to interfere with the circulation of the American Bee Journal, but I would not advise any one to subscribe for it instead of buying a book. After the book, then a good bee journal is a great help.

4. Yes.

Yes, if the season is good enough and long enough.

6. It doesn't matter how, so you get them into the hive. You may jar them into the hive, or you may set the package inside the hive, trusting the bees to come out and crawl upon the combs or frames, provided you can furnish them a frame of brood, which you may remove a day or two later if you wish.

7. Yes, and it is costly business to furnish a starter only, for if the frames are not entirely filled with foundation so much drone-comb will be built that it will make you considerably short on honey.

Buying Bees by the Pound With a Queen—Wintering, Etc.

1. I subscribed for the American Bee Journal and a queen for $1.60. If I order a pound of bees from Dadant & Sons, could the queen from the Bee Journal be sent with this pound of bees?
2. I have six drawn combs with some sealed and some unsealed honey for the other four frames. I shall use full sheets of foundation for starters. Will one pound of bees build up a strong colony on this?
3. I winter my bees outdoors, two colonies in a box, with heavy roof paper all around the box and six inches of leaves for packing all around the hives, with one square inch entrances. Is this the best way to winter bees outdoors?
4. Today many bees are flying, and some drop on the snow and die. Can this be prevented?
5. I have four colonies and do not want to increase. If a colony should swarm and I hive the swarm in a new hive and put the parent colony with it, would it be liable to swarm again? IOWA.

ANSWERS.—1. Yes; and it's a very nice way to get the queen, avoiding the risk of introduction.

2. That depends. If obtained about the time of fruit-bloom, in an extra season, you may have a strong colony for winter. If the season should be very poor, it may need feeding to get them ready.

3. Your plan is good, and if your bees have wintered successfully in that way it is not worth while to look for anything better.

4. Toward spring some bees are always dying off from old age, and it is possible that only these aged bees are flying out. Sometimes, however, younger bees are lured out by the bright sun when snow is on the ground, and fall into it. You may prevent this by shading the entrance with a board.

5. If you unite the old colony with the swarm, giving the brood also, they'll swarm. If you give only the bees, without the brood, they'll not swarm.

How to Keep Queen Alive Without Bees

I have been trying to find in Langstroth's book or in American Bee Journal how to keep several queens by themselves during summer or over winter. I have lost several colonies this winter of which the queens were most important. I have also tried the experiment, and expect to continue trying, to keep queens between seasons in separate apartments, and to give some occasionally a needed rest to recuperate and increase life and vitality. Can it be done, and how?

ANSWER.—If you are successful in your experiments in keeping queens over winter without having each queen kept in a colony or nucleus of its own, you will be putting the fraternity under obligation by making known how it is done. The best I can offer is to keep the queen in a nucleus in a hive with a full colony, a bee-tight partition between the colony and the nucleus, or else two or more nuclei in the same hive.

In summer it is easier. A queen may be kept in a provisioned cage with a dozen bees in a warm place or over a colony for a number of days, perhaps two or three weeks. Several queens may be kept in separate cages in a queenless colony, and with more or less success in or over supers of queen-right colonies. When I have a valuable queen whose life I wish to prolong, I prefer to keep her in a nucleus where she may continue laying lightly.

Photos on Title Page—Swarming

1. Whose picture is represented on the left and whose on the right of the monogram just above the opening page on bee topics of the Bee Journal?
2. Last summer I had a swarm that settled close by on a tree. I removed the parent colony to a new stand and inserted a new one in place of it, as is the usual custom, and hived the swarm. I then placed the super above them which they had on before they swarmed, and at the bottom they had full sheets of foundation. Five minutes after I could see the field bees going in as if nothing had happened. The sweet clover was just coming into bloom, and this hive was full of bees and the prospects fine.

About three weeks after this I noticed the bees all swarming out of the hive again; they circled about for ten minutes and finally lighted on that same tree. I presume they were clustered in that tree about 15 minutes, when all of a sudden I saw them returning one by one to the hive, until the whole swarm was back. That was a puzzle to me, but I didn't molest them, as they began working the same as ever. About three weeks later I noticed they were taking it easy while bees in other hives were carrying heavy pollen morning and evening.

I concluded something was wrong and that wrong must have happened the day they swarmed for the second time. In opening the super I was astonished to see nothing but drone cells bulging out, and on examining the brood-chamber there wasn't a cell built in the foundation. Seeing it was too late to give the brood to rear a queen, I united them with one of the other colonies. What became of the queen and why was the brood-chamber left empty? ST LOUIS.

ANSWERS.—1. On the title page of the American Bee Journal the man at the left is Rev. L. L. Langstroth, the inventor of the movable-frame hive. At the right is Charles Dadant, who did a great deal of good by introducing and championing the movable-frame hive in France, as well as by rearing a son, C. P. Dadant, who has turned out to be the best .....Hold on, Doctor! Can't afford to publish the rest of that!—C. P. D.

2. The trouble began when you gave that super to the swarm. That looked better to the bees than the foundation in the brood-chamber, so they went right up and began housekeeping there. Next time either put a queen-excluder between the brood-chamber and the super, or else don't give the super to the swarm until the queen has made a fair start at laying below, say three days or more.

Large or Small Hives?—Swarming

1. I would like some information on bees. A few friends of mine take three, and sometimes as high as six, brood-chambers and stack up on each other, but I cannot see any advantage doing that way. If there is I would like to know it.

2. I use the 8-frame brood-chamber, 12 inches deep, but most of them are 9½ and 10 inches. Which is the best?

3. Would you get a larger swarm from a 12-inch hive than you would from a 9½ or 10 inch in swarming time?

4. I have a few small brood chambers, and as a rule they swarm two or three times during the summer season until they are weak. Can I put on an extra super, take the swarm and queen away and put them back in the same hive, or will they stay, as the swarm is very small? ILLINOIS.

ANSWERS.—1. In working for section honey you will find it the case in a good season that the bees will be working in 3, 4, and even up to 8 supers before all the sections are sealed in the first super. It is somewhat the same way with extracting supers, and some of our best beekeepers leave all on until the close of the harvest.

2. The larger hive may be the better.

3. The larger hive is likely to give the larger swarm.

4. After they have swarmed it will not work to give them an extra super and return the swarm; they will swarm out again. Still, if you keep returning the swarm each time it issues, after a week or so only one young queen will be left in the hive, and then they will swarm no more.

Repairing Combs—Danzenbaker Hives

1. I have some brood-combs that the mice got into and chewed holes in the center of the combs; some are clear through while others are only as far as the midrib. Will it be all right to use them in the brood-chamber this spring?

2. Will you tell me the real need of having a bottom-board, one side being deeper than the other?

3. When my new hives arrived, I found that after I had put them together I had some pieces left; they are a little more than ¾ of an inch wide by ¼ inch thick; some are 16½ inches long and others 18½ inches long. What are they for? I purchased Danzenbaker hives.

4. Do you consider the Danzenbaker hive a practical hive, or had I better get the regular Langstroth on the start and save the changing later. NEW YORK.

ANSWERS.—1. It will be all right to use them, only you should know that wherever the midrib is gnawed away the bees will be pretty sure to build drone-comb. You can prevent this by using one or more of the combs to cut up into patches to fit in the holes. Or, you can fit foundation into the holes. Let the foundation be ⅛ or ¼ inch larger than the hole, cut away the cells down to the midrib on one side, have the foundation quite warm and soft, and press it down into place.

2. I invented the reversible bottom-board although sometimes another name has been attached to it; my object was to have a deep space in winter that would not be clogged by dead bees, and a shallower space in summer, so the bees would not build down. But I have not used the reversible bottom-board for years, preferring a bottom-board two inches deep for the year around, using a bottom-rack in summer to prevent the bees from building down.

3. I don't know; perhaps to fill the spaces to prevent the bees getting in behind the frames.

4. I think most beekeepers will agree with me in preferring the Langstroth.

Laying Worker

I looked over my bees to find how they had wintered, and found that my best colony had brood in one frame of the super, although there was plenty of room in the brood-chamber.

This brood was raised and capped like drone-brood, but was in worker-size cells. One cell had three eggs in it. What is the cause of this? SUBSCRIBER.

ANSWER.—It is either a case of laying workers or a drone-laying queen, and the three eggs in a cell looks like laying workers Anyhow, if there is no normal worker-brood in the hive, the case is hopeless, and the best thing is to unite the colony with another, preferably a weak colony with a good queen, yet there is a danger that bees with laying workers may antagonize the queen, so the safer way will be to distribute the combs and bees to several colonies. They are probably of little value, being old.

Keep Grass Down—Queen Rearing—Queen Introduction

1. I am thinking of covering the ground with several inches of soft coal cinders where I place my bees in summer, and stamp it down smooth and hard to keep the grass from growing. Do you think there would be anything objectionable about it?

2. I have never had any experience with queen rearing, and would like to try my hand at it another summer for my own yard. What plan do you think best for me to follow in this location—I have 65 colonies?

3. How long is it necessary to have a colony queenless before it is safe to give them a laying queen or a ripe queen-cell? WISCONSIN.

ANSWERS.—1. I know of no objection, but think the idea a fine one.

2. That's too big a subject to tackle in this department, which is only intended to supplement, but not to take the place of, a book of instruction. Beside what you will find in your bee-book, you can find a whole book upon the subject, "Doolittle's Queen Rearing;" and if you care to know how I rear queens, you will find it fully given in my book, "Fifty Years Among the Bees."

3. There is generally some risk about introducing queens, no matter how long the colony has been queenless. Indeed, after the colony has been queenless a long time there is more risk than after the first few days. The queen is generally put in an introducing cage, and the cage may be given immediately upon the removal of the old queen, the bees eating the candy and releasing the queen within a day or so, but it is perhaps safer to wait a day or so before putting the cage in the hive. It may be still better to give the cage as soon as the old queen is taken away, but keep her fastened for a time, planning to have the bees free her not sooner than three days or more.

Extractor—Giving Bees Old Combs

1. I keep 12 to 15 colonies of bees, and wish to know if it would pay me to have an extractor? I have the protection double-walled hive, and use a super that takes both the 4x5 section and shallow extracting frame nicely, and I use both, too.

2. I have some brood-frames whose combs have been partly destroyed by moths, and I wish to know how best to use these. Shall I put them into use and take the chances on drone-comb, or cut out the remnants of comb, and put in full sheets of foundation? ILLINOIS.

ANSWERS.—1. It would probably pay to have an extractor for a less number than 12, unless you produce comb honey exclusively

2. If a frame is less than half occupied with worker-comb, cut out all and fill anew with foundation; if it has not very many holes or patches of drone-comb, fill up these places with patches of worker-comb or foundation.

Dividing—Good Bee-Book

1. I am a beginner in beekeeping, and the thing that bothers me is how to divide my colonies instead of letting them swarm. In the March number of the American Bee Journal, in answering a question of how to divide you say, "Take from a colony all but one of its frames of brood with adhering bees, put them in a new hive on a new stand, leaving the queen on the old stand with the

THIS IS THE TIME FOR OPEN AIR DEMONSTRATIONS—HENRY BEHRENS, OF SOUTH DAKOTA, HANDLING BEES FOR VISITORS AT A FAIR one frame of brood, and fill up each hive with frames filled with foundation." That leaves the new colony without a queen. How are they to be supplied with a queen?

2. You mention a good bee-book, Dadant-Langstroth. Where can I get this book and what is the price?

3. How can I tell when a colony is ready to be divided? Colorado.

Answers.—1. You can give the queenless bees on the new stand a queen, or you can give them a ripe queen-cell—a queen-cell from which the queen will emerge in a day or so—or you can leave them to themselves and they will rear a queen.

2. You can get the book from the office of the American Bee Journal. The price is $1.50, or with the American Bee Journal one year, $2.00.

3. You will be pretty safe to divide about the time the bees in your locality begin to swarm naturally, and don't divide them until a colony is strong, having brood in at least six frames.

SPECIAL NOTICE

THE NATIONAL CONFERENCE ON HONEY PRODUCTION

We call the attention of our readers to the appeals to the beekeepers in these columns for a strenuous effort in honey production and food conservation. A call was made for the consideration of these matters at Washington April 23. The bee editors, teachers, extension workers and supply manufacturers were invited to this meeting on short notice.

The conference drew up a series of recommendations which are given herewith.

Committees were appointed as follows: (1) To obtain an increased allotment of funds for the Office of Bee Culture Investigations for this emergency; (2) To ascertain the available supply of honey containers and to urge the commission which is dealing with this general subject to include honey containers in their plans; (3) To learn what markets are available for exports of honey; (4) To ascertain the supply of paper containers, in case tin or glass cannot be had; (5) To request the postal authorities to permit the mailing of combless packages of bees. These committees began work promptly on the following morning and their reports will be issued as quickly as possible. The Office of Bee Culture Investigations was requested to notify Texas beekeepers of the shortage of bees in parts of the Northwest. Since prospects are poor in Texas it was suggested that many beekeepers could advantageously sell bees to beekeepers in the Northwest.

The meeting also passed the following resolutions addressed to the Secretary of Agriculture concerning the possible increase of honey production:

1. People who have *no land* may keep bees and produce 50 to 100 pounds of honey from each colony. Thousands are ready to start.

2. The present production of 300,000,000 pounds *must be increased* at once by at least 100,000,000 pounds to fill the demand, and to five times as much as soon as facilities are available.

3. Every pound of honey (carbohydrate) produced will release one pound of butter or sugar for other purposes of food.

4. With a prospective shortage of sugar a large production of honey is imperative.

5. To bring the 800,000 existing and many more prospective beekeepers to the highest point of efficiency, we ask for the Bureau of Entomology, Division of Bee Culture, a reasonable sum out of the emergency appropriation of $25,000,000 for the Department of Agriculture. To enable them to extend their work at once in every State of the Union, it would require an appropriation of 4 percent or $100,000.

(Signed)

Frangis Jager,
President National Beekeepers' Assn.

G. E. Bacon,
G. B. Lewis Co.

E. R. Root,
Editor of Gleanings in Bee Culture.

A. L. Boyden,
Secretary The A. I. Root Co.

Burton N. Gates,
Massachusetts Agricultural College.
Amherst, Mass.

The American Bee Journal is heartily in favor of the above suggestions and of anything which will increase the production of food articles. We hear from private sources that in many countries the sugar supply is short. Now is the time to urge the most extensive production of honey which it is possible to secure.

Classified Department

BEES AND QUEENS.

Phelps' Golden Italian Queens will please you.

Fulmer's Gray Caucasian queens are winners; also by frame and pound.

Minnesota bred Italian queens. Virgins, 45c; mated, $1.00. O. C. Wandrie, Frazee, Minn

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Bees and Queens from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

Try Alexander's Italian queens for results. Untested, each, 75c; 6 for $4.25; $8.00 per dozen. C. F. Alexander, Campbell, Cal.

Finest Italian Queens. Send for circular and prices. May to November.
J. W. Romberger, 3113 Locust St., St. Joe, Mo.

Tested leather-colored queens, $2.00; after June 1, $1.50; untested, $1.00; $10 per dozen.
A. W. Yates, 3 Chapman St., Hartford, Conn.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

For Sale—Golden untested queen, $1.00; 6 for $5.00. For quantities, write me. Satisfaction guaranteed. R. O. Cox,
Rt. 4, Greenville, Ala.

For Sale—200 Colonies Italian Bees in 10-fr. hives. All worker comb, extracting supers and section-holders. J. B. Merwin,
Prattsville, N. Y.

Phelps' Golden Italian Bees are hustlers

Vigorous prolific Italian queens $1.00; 6, $5.00, June 1st. My circular gives best methods of introduction. A. V. Small,
2303 Agency Road, St. Joseph, Mo.

For Sale—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.
Union Springs, Ala.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

For Sale—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

Try my very best Caucasian-Italian tested queens at $1.00 each. Hybrids at 25c each.
Peter Schaffhauser, Havelock, N. C.

Golden Italian Queens, no better honey gatherers anywhere at any price. Untested, $1.00. Tested, $2.00. Wallace R. Beaver,
Lincoln, Ill.

Italian Queens from the E. E. Mott's strain of bees. Unt., 90c each; $9.00 per doz. Safe delivery guaranteed.
Earl E. Mott, Glenwood, Mich.

I am now booking orders for my 3-banded Italian queens, for delivery after May 20. One untested, 75c; 6, $4.25; 12, $8.00. Tested queens, $1.50. Robt. B. Spicer, Wharton, N. J.

For Sale—1000 lbs. of bees in 2-lb. packages. 1 to 49 2-lbs. bees in package, $2.25 each; 50 to 500 2-lbs. bees in package, $2.12½ each. Untested Italian queens, 75c extra.
H E Graham, Gause, Tex.

Rhode Island Queens, Italian, Carniolan, Caucasian and Banats. Tested in May, $2.00. Untested, $1.50. Full colonies and bees by the pound. Send for circular.
Edwin Tuttle, Woonsocket, R. I.

Queens of Quality—Select 3-band leather colored Italians, bred for honey production. Untested queens, 75c each; six, $4.25; 12, $8.00. Circular free.
J. I. Banks, Dowelltown, Tenn.

Head your colonies with some of our vigorous young three banded Italian queens. Untested, June 1, $1.00; per doz., $9.00; nuclei and full colonies. Satisfaction guaranteed.
A. E. Crandall & Son, Berlin, Conn.

Goldens that are true to name. Write for testimonials; one race only. Unt., each, 75c; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. Tested, $1.50. Sel. test., $2.00. Breeders, $5.00 and $10.
Garden City Apiaries, San Jose, Calif.

Queens—3-banded Italians. Bred strictly for business. Untested, 60c. Tested, $1.00. Safe arrival and satisfaction guaranteed or money refunded. Sinking Creek Apiaries,
Gimlet, Ky.

For Sale—A fine apiary of 95 colonies, together with all fixtures. Good location for honey. Never had a failure. Reason for selling, death of wife. For further particulars, address H C. Gadberry, Miami, Mo.

For Sale—2-fr. nuclei 3-band Italians with queen, $2.25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices. J. B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

Leather colored 3-band Italian bees, $1.25 per pound. Tested queens, $1.00; untested, 75c each; 2-fr. nuclei, $2.00. Delivery after April 15. C. H. Cobb, Belleville, Ark.

Well Bred 3-banded Italian queens' Prices for June, one, $1.00; 6 for $5.00. Tested, $1.25; 6 for $7.00. Write for circular. Nuclei and full colonies ready now.
J. F. Diemer, Rt. 3, Liberty, Mo.

To Inquirers:—I sell no queens directly but have an arrangement with the Stover Apiaries, Starkville, Miss., which I keep supplied with best breeders, and they can supply you with my stock.
C. C. Miller, Marengo, Ill.

Golden Italian Queens by June 1st. Untested, 75c, or six for $4.25; doz., $8.00. Select untested, $1.00. Tested, $1.25; six for $7.00. Breeders, $5.00. Pure mating guaranteed. Send for circular. J. I. Danielson,
Fairfield, Iowa.

My Bright Italian queens will be ready to ship April 1 at 75c each; virgin queens, 30c each. Send for price list of queens. Bees by the pound. Safe arrival and satisfaction guaranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

Swarts' Golden Queens of quality; produce bees that are not surpassed by any bees, in any way, anywhere. Satisfaction guaranteed. Mated, $1.00. Select, $1.25; 6 for $5.00. Tested, $1.75. Select, $2.00.
D. L. Swarts, Rt. 2, Lancaster, Ohio.

Fine Italian Queens—Can furnish select stock at the following prices: Single queen, $1.00 each; 2 queens, $1.75; 3 queens, $2.50; 12 queens, $9.00. Six or more at dozen rates. No disease. Safe arrival. Can begin filling orders about May 15. Give me a trial.
Chas. M. Darrow, Star Rt., Milo, Mo.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

GOLDEN ITALIAN QUEENS from a breeder that was 1st premium winner at Ill. State Fair in 1916. Untested, 75c; six for $4.25; 12 for $8.00. Select untested, one, $1.00; 6, $5.00; 12, $9.00. Tested, $1.50; 6, $8.00.
A. O. Heinzel, Rt. 3, Lincoln, Ill.

BUSINESS FIRST QUEENS—three-banded Italians. Select untested, $1.00 each. Your queen sent by return mail or your money back. I will send each one ordering from me a plan for preventing swarming if you desire. No disease. Send for price list.
M. F. Perry, Bradentown, Fla.

QUEENS—1-year Root cheap. Best select tested, 90c; average, 70c; medium, 50c. Two Root breeders, 2 yr. old, $2 50 each. Moore queens, young, from another yard, untested, 75c; doz., $8 00. Tested, $1.00; doz., $10. Book orders now for May 20 delivery. Safe arrival and satisfaction guaranteed.
J. C. Robbins, Jr., Mesilla Park, N. Mex.

GOOD ITALIAN QUEENS—Tested, $1.00; untested, 75c. One-pound packages with untested queen, $2.25; 2-lb. package, $3.25. One-pound package with tested queen, $2 50; 2-lb. package, $3.50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4.00. With tested queen, 2-frame, $3.50; 3-frame, $4 25. We can please you. G. W. Moon
1904 Park Ave., Little Rock, Ark.

GOLDEN Italian queens; northern breed; new methods. Our standard, size and honey producing qualities. Write for circular and price list.
H. M. Leach & Sons, Hiram, Ohio.

GOLDEN ITALIAN Queens about May 1, that produce golden bees. Good honey gatherers. No foulbrood. Select tested, $1 25 Tested, $1.00. Untested, 75c; 6, $4.25; 12, $8.00. No nuclei or bees for sale.
D. T. Gaster, Rt. 2, Randleman, N. C.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

GOLDEN ITALIAN queens of the quality you need. Bred strictly to produce Golden bees that get the honey. One, 75c; 6, $4.25; 12, $8.25; 50 or more, 60c each. Prompt delivery and satisfaction guaranteed.
L. J. Pfeiffer, Rt. A, Bx. 219, Los Gatos, Calif.

I AM Now prepared to supply you with Golden 3-banded and Carniolan queens. Give me a trial and be pleased. Tested, each, $1.00; 12 or more, 85c each. Untested, 75c each; 12 or more, 65c each. Ten percent discount on orders booked 30 days before shipment. No credit; no c. o. d. shipments.
I. N. Bankston, Eagle Ford, Tex.

GOLDEN ITALIAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 59 Broadway Ave., San Jose, Cal.

GOLDEN 3 BAND Italian and Carniolan queens: Virgin, one, 50c; 6, $2 50; 12, $4.00; 100, $25. Untested, one, 75c, 6, $4.20; 12, $7.80; 100, $60. Select untested, one, 85c; 6, $4.80; 12, $9.00; 100, $70. Tested, one, $1.00; 6, $5.40; 12, $10.20; 100, $80. Select tested, one, $1.25, 12, $13.80; 100, $100. Breeders, $3.00 each.

Bees in packages without combs: ½-lb., 75c; 1-lb., $1.25; 2-lb. $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2.25; 3 frames, $3.00. Add price of queens wanted. We guarantee safe arrival and no disease.
C. B. Bankston, Buffalo, Tex.

GRAY CAUCASIANS, an exceptionally vigorous, prolific, long lived race. Early breeders, gentle, and best of honey gatherers. Untested queens, $1.50. Select unt., $2.00. Tested, $3.00. Select tested, $3.50. After June 20th, untested, $1.00. Select unt., $1.25. Tested, $2.00. Select tested, $2.50. Improved northern bred Italian queens as good as the best at same prices. If you desire Caucasian queens, please let me book your order early. Ask for circular. F. L. Barber, The Queen Breeder, Lowville, Lewis Co., N. Y.

LEGAL NOTICE.—The Texas Honey Producers' Association, with main office at San Antonio, Tex., hereby gives notice of the organization as a limited partnership. It is organized with the intention of incorporation under the laws of the State of Texas for the business of purchase and sale of honey, beekeepers' supplies, cans and appliances used in the production and sale of apiary products. The liability of any member may be learned upon application to E. G. LeStourgeon, Secretary, P. O. Box 1048, San Antonio, Tex.

FOR SALE—Three-band Italian bees and queens. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. We are now shipping bees and queens daily. Bees are all in standard hives, Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease.

Bees without queen: Three-frame nuclei, $2.25; 2-frame nuclei, $1.75; 1-frame nuclei, $1.25. Three-lb. bees, $3 25; 2-lb. bees, $2.25; 1-lb, $1.50. 3-band Italian queen, untested, 75c. Tested, $1.00. If queen is wanted, add price of queen.
The Hyde Bee Co., Floresville, Tex.

FOR SALE—Famous Root's, Moore's, Davis', Geo. B. Hows' strain of Italian 3-band bees.
March 21, 1917.

H. B. MURRAY, ESQ., Liberty, N. C.

Dear Sir:—In 1914 I purchased two untested Italian queens of you. One was introduced to a full swarm which did fairly well, and the other was introduced to a small nucleus. The one which was introduced into the nucleus developed into an extra large swarm, and I gave it another 10-frame hive-body in July and sent it to Glendale. I did not visit it until after the honey flow and was surprised to find that the entire 20 frames were practically full of honey. In the spring of 1915 I brought the queen home, and although I had an imported queen in the yard have used your queen as a breeder, and now hundreds of her daughters are scattered through New England.

This strain of bees are vigorous, extremely gentle, evenly marked, fine honey gatherers, and cap their honey very white, and are the best all around bees I have ever seen. I shall want a dozen untested queens of this strain May 1.
Truly yours,
EDWIN F TUTTLE.

I have hundreds of recommendations of my strain of bees. H. B. MURRAY.

Price before July 1; Untested queen, 1, 75c; 6, $4.00; 12, $8 00. Select untested, 1, $1.00; 6, $4.50; 12, $8 50. Tested, 1, $1.25; 6, $6.00; 12, $10. Select tested, 1, $1.50; 6, $8.00; 12, $13. Extra select tested, 1, $2.00; 6, $10; 12, $15. ½-lb. bees with queen, 1, $2.00; 6, $10; 12, $16. 1-lb. bees with queen, 1, $2.50; 6, $12; 12, $20.

After July 1: Untested queen, 1, 70c; 6, $3.25; 12, $6.50. Select untested, 1, 80c; 6, $3.75; 12, $7.00. Tested, 1, $1.25; 6, $5.00; 12, $9 00. Select tested, 1, $1.50; 6 $6.00; 12, $10. Extra select tested, $2 00; 6, $8.00; 12, $13. ½-lb. bees with queen, 1, $1.75; 6, $8.00; 12, $14.00. 1-lb. bees with queen, 1, $2.00; 6, $10; 12, $17.
H. B. MURRAY, Liberty, N. C.

HONEY AND BEESWAX

FOR SALE—White clover comb honey, No. 1 and fancy. W. L. Ritter, Genoa, Ill.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTED—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

WANTED TO BUY a quantity of dark and amber honey for baking purposes.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE to the highest bidder a limited quantity of Michigan's best white extracted honey, in 60-pound tins.
A. G. Woodman, Co., Grand Rapids, Mich.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

HONEY WANTED—Extracted, white, light amber and amber of good quality. Can use several cars. Send samples and prices.
Wesley Foster, Boulder, Colo.

FOR SALE—200 cases white clover comb oney. It is mostly fancy stock, and is cased n 24 section shipping cases. Interested parties address Bell E. Berryman,
Central City, Nebr.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

FOR SALE—260 L. frames of drawn combs, wired, hives, extractor, etc. No disease.
P. H. Dunn, Akron, Iowa.

NORTHWESTERN BEEKEEPERS! Save time and freight by ordering supplies (at catalog prices) near home. Geo. F. Webster,
Valley View Farm, Sioux Falls, S. Dak.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

SUPPLIES.

WANTED—A small extractor in good condition. Wesley Koch, Kingsley, Mich.

FOR SALE—260 L. frames of drawn combs, well wired, hives, extractor, etc. No disease. P. H. Dunn, Akron, Iowa.

FIFTEEN PERCENT discount on med. brood foundation, Hoffman frame hive-bodies.
E. Decock, Medford, Wis.

FOR SALE—100 comb honey supers; all painted white; about half dovet'd; the rest hand made. All in first-class shape. 25 to 30 cents apiece, if sold at once. Address,
James D. Benson, Rt. 2, Juda, Wis.

FOR SALE—Fifty 8-frame hives; used but in good condition; painted; complete with frames; no combs, with Higginsville cover and reversible bottom, at $1.00 each or $45.00 for the lot. The M. C. Silsbee Co.,
Cohocton, Rt. 3, N. Y.

SITUATIONS.

WANTED—Industrious young man, fast worker, and of clean mental and body habits, as a student helper in our large bee business for 1917 season. Will give results of long experience, and board and small wages. Give age, weight, experience, and wages in first letter.
W. A. Latshaw Co., Clarion, Mich.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

HONEY LABELS.—We have just issued a new and up-to-date catalog of honey labels and stationery. Write for your copy. Neat labels and quick delivery guaranteed.
American Bee Journal, Hamilton, Ill.

WANTED

WANTED—75 or 100 colonies of bees; 10-fr. hives; wired frames. Price reasonable.
P. O. Box 506 "U" Farm. St. Paul. Minn.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

MISCELLANEOUS

25 LADIES' COOTS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

FOR TRADE—One $21 post card camera and outfit to exchange for a second-hand extractor. Write J. L. Barkley, Lometa, Tex.

FOR SALE—10 a. home; 4 a. in blue grass pasture; 4 a. in alfalfa; 2 a. in garden and orchard; 12 varieties of fruit; watered by 3 springs and creek; 4-roomed house and outbuildings; ½ mi. to school; 1 mi. to R. R. station; electric lights and telephone; $2800. Terms easy; 100 col. bees also for sale.
Jes Dalton, R. R. 1, Cove, Oregon.

FOR SALE—Oak Ridge Apiary, consisting of 150 colonies of bees, house, barn, work shop, cement chicken house, with 5½ acres of land and bearing fruit. Situated 2½ miles from town with two, R. R., one a divison point. 20 miles from a city of 80,000 inhabitants. Address, Box A 12 R. F. D. 3.
Chillicothe, Ill.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 2c stamp at once for prospectus.
SINCLAIR, Box 244, D 41, Los Angeles, Cal.

Statement of Ownership, Management, Circulation, Etc.,

of the American Bee Journal, published monthly at Hamilton, Illinois.
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Known bondholders, mortgagees, and other security holders holding one percent or more of total amount of bonds, mortgages or securities—None.
[Signed] M. G. DADANT, *Manager*.
Sworn to and subscribed before me this 14th day of April, 1917.
[SEAL.] R. R. WALLACE.
Notary Public.
My Commission expires Sept. 22, 1917

Crop Reports and Market Conditions

CROP AND MARKET REPORT.

For our May reports we sent out the following questions:

1. How much winter losses?
2. Crop and plant prospects?
3. How is the honey crop, so far?
4. Has any honey of 1917 crop been sold ahead, and at what price?
5. What is being offered in carloads for fall delivery of honey?
6. What prices would you suggest in car lots for honey, comb, extracted, and bulk comb?

WINTER LOSSES

The following is a summary taken from the reports coming in: Losses in the whole northeastern part of the country and as far west as the Missouri river have been about normal, varying from as high as 50% with the beginner down to 2% with the veteran, with probably an average loss of 6 to 10%. Losses have also been normal throughout the south, with some large losses from certain Louisiana and Oklahoma districts. The weather there has been exceedingly backward, however, and spring losses from starvation are large. The average loss will be probably 10%.

In the west, the winter has been exceedingly severe and losses run higher than common, Utah reporting 40 to 60% loss, and this from experienced producers. Idaho losses range from 10 to 30% generally, with about the same for Washington. Colorado reports 10 to 15% loss, with one producer reporting 50%.

CROP PROSPECTS

Except for spotted districts, the white clover prospects of the north and east are good. Some parts of Illinois, Iowa, Nebraska and the Dakotas, report the clover practically all killed. Minnesota, Wisconsin, Michigan and the east had even better prospects than last year. Other sections are probably 60 to 85% of normal to a little above normal conditions.

In the southeast, the only places reporting normal conditions are Georgia and parts of Florida. The balance of the section is backward, with the anticipation that the crop will not range much over 50% of normal. In Texas and Louisiana it is extremely dry, bees are still starving and the crop will run very low, being estimated by different producers in scattered sections at from 10 to 50% of a normal crop.

Conditions of plants in the northwest are about normal, and probably a little lower than normal in California, owing to a backward spring, and extremely cool weather which still continues.

THE HONEY CROP

All early honey-producing plants in Texas have failed. Louisiana is the same. In fact, the whole South is, except that there is a good flow now on from titi in Georgia. It is yielding some surplus.

HONEY SOLD IN ADVANCE

There are no reports of advance sales in the East or South, except that in Texas some sales have been made in advance in a small way at 12c for extracted and 14c for bulk comb. One Michigan and one Wisconsin reporter state that they have sold their entire crop of extracted clover at 8c f. o. b. their station.

Practically no advance sales have been made in the west, but in California, probably 25% of the extracted honey has been contracted for at prices ranging from 6½c to 7½c for amber and 7½c to 9c for white, f. o. b. shipping point.

OFFERS FROM BUYERS

Buyers are very active. Many producers have refused 8c for white extracted and 7c for amber. Some offers have been made for orange extracted, soon to be harvested, at 9½c, f. o. b. shipping point. Many offers have been made in California of 7 or 7½c for all the crop of a beekeeper—amber and white. One party reported that buyers were endeavoring to contract at almost any price to get the honey. The above is not true of comb, very little being offered on.

It is reported that the British government attempted to contract for 5,000 barrels of honey in San Antonio at prices ranging from 7c to 11c per pound, according to grade. One New York buyer reports an order from a British firm which he is attempting to fill at their prices.

SUGGESTIONS FOR CAR LOT PRICES

Almost all kinds of prices were suggested by reporters, from as low as 7c for amber extracted to as high as $4.50 per case for comb in car lots. The consensus of opinion is that extracted white honey should command a price of not less than 10c f. o. b. shipping point in car lots, with 1½ to 2½c less for amber, depending upon grade. The favorite prices for comb in car lots seem to be $3.25 to $3.75 per case.

We are passing through an unusual period at present. The war, the demand from abroad, the increased demand of large bottlers, and the increased local sales of honey are bound to elevate the price.

If contracts are ahead they should be made with as full a comprehension as possible of existing conditions and at a price absolutely satisfactory to the beekeeper.

One point which we would emphasize among beekeepers is that there should be some distinction between the retail and wholesale prices. That is, a beekeeper should not get the same price for ten pounds of honey as for ten thousand. If he tries to do this he is bound to suffer from needlessly low prices when he tries to sell his honey in large lots to others who are selling again.

But remember, that though we as beekeepers want to get our proportionate share of increased prices, we as patriotic citizens must, above all, follow the suggestions in the President's message and exert ourselves to the utmost to increase the crop of honey from our bees. Leave no stone unturned to increase the yield, not only from our bees, but from every foot of available land.

HONEY AND BEESWAX

CHICAGO, April 17.—There is not much change in the market since our last quotations. Extracted honey is still in demand, with the white selling at 10@11c per pound; ambers 8@9c per pound. Comb honey for which there is very little demand, 14@15c per pound. Beeswax if clean 33@35 per lb.
R. A BURNETT & CO.

KANSAS CITY, MO., April 16.—The market on honey is very firm at $2 75 for No. 1, and we believe that something fine would bring a little more. Extracted honey is cleaning up and there is very little here. The market ranges from 8@12c, according to the quality and kind of honey. Beeswax is worth from 30@33c a pound, according to quality.
C. C. CLEMONS PRODUCE COMPANY.

CHICAGO, April 17.—Our honey market is a little more active. Our market is cleaning up pretty well. We have handled over eight cars this year, and we are sold down to less than a hundred cases today. In fact, we are in the market for honey.

We are also pretty well cleaned up on extracted honey. We are selling this at 10@12c per pound. We look to see honey clean up high for the of balance the season. Of course, it is getting late and it ought to be sold.

The comb honey last year had a very poor wind up. Honey did not clean up and some was carried over last year, although we always clean up, and make it a point to do this by the first of May. We give credit partly to ourselves this year for the active aggressive campaign we adapted in keeping the honey before the public and pushing it in every way possible. While we only handled eight cars this year, probably next year we will handle twelve or fifteen cars both comb and extracted honey.

The market on beeswax remains unchanged, from 30@35c, according to color and quality.
COYNE BROTHERS.

NEW YORK, April 17.—All grades of comb honey are well cleaned up, with the exception of some odds and ends of poor quality, for which there is no demand to speak of. White honey will bring from 14@16c a pound, according to quality, lower grades from 11@13c.

Extracted honey is also well cleaned up and very little stock available at this time. As to the conditions of the market in general, in comparison with last year at this time, prices are ruling considerably higher and supplies are much less.

Beeswax is in good demand, and prices rule from 40@42c a pound, according to quality.
HILDRETH & SEGELKEN.

SAN ANTONIO, April 16.—The market is practically bare of honey—both comb and extracted. Owing to the extreme drouth early honey flows have been cut off or delayed and no honey will be shipped from Texas for some weeks. Prices ranging from 8@10c for extracted, and 10@12c for bulk comb are being offered for new honey, but little, if any, is being contracted for Beeswax is firm and in strong demand. Local prices 30@32c per pound.
SOUTHWESTERN BEE CO.

DENVER, Colo., April 16.—With the exception of a small lot of extra fancy white comb honey we are entirely cleaned up. Our supply of extracted is only sufficient for our local requirements.

Demand for extracted in carlot continues strong. There is also a fair demand for comb honey in carlot, which is unusual this late in the season. We are quoting the following jobbing prices: Extra fancy comb honey, per case, $3.15. Fancy, out of stock. No. 1, out of stock. No. 2, out of stock.
THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

DOCTOR MILLER'S

Thousand Answers to Beekeeping Questions

Is the new 280 page cloth bound book, just out. It is a compilation of some 1000 questions out of more than 10,000 that Dr. Miller has answered for beekeepers in the American Bee Journal in the last 22 years.

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American Bee Journal, Hamilton, Illinois

MOTT'S NORTHERN-BRED ITALIAN QUEENS

that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans on "How to Introduce Queens and Increase," 25 cents. List free.

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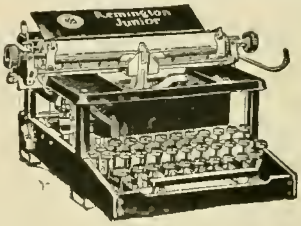

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Read a few reports of big yields from single colonies of this gentle strain of Goldens: H. E. Bartz, Keytesville, Mo., 264 pounds of extracted honey; J. M. Buchanan, Franklin, Tenn., 250 pounds of extracted honey; L. C. McCarty, Nampa, Idaho, 250 pounds of comb honey; Fred Dury, Unionville, Mo., 374 pounds of comb and extracted honey.

I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—*Prices of Queens*—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Select queen tested for breeding, $5.00. - The very best queen tested for breeding, $10.00

BEN G. DAVIS, Spring Hill, Tennessee

FOREHAND'S QUEENS

15 LBS. SURPLUS ☞ *Which Colony is Yours, Mr. Beekeeper?* ☞ **150 LBS. SURPLUS**

GET A GOOD QUEEN

One that will keep the hive chock-full of bees at all times, make the biggest yields of honey, stingless, and look the prettiest at a medium price. Over 25 years of select breeding has brought our queens up to a standard surpassed by none and superior of many. We have tried the principal races and every method known, and we have now selected the best of both THE DOOLITTLE METHOD and the THREE-BAND BEES. Use the 3 Bands. Why? Because they get results. The foremost bee-men of the world use them. Our queens are sold by many of the largest dealers in the United States.

Louis H. Scholl (one of the largest beekeepers of the Southwest) says: "Three-band Italians have proven the best all-round purpose bee after trying out nearly every race, not only in an experimental way while still at A. M College, but in our own apiaries as well."—(*In Beekeepers' Item.*)

	1	6	12		1	6	12
Untested	$ .75	$ 4 25	$ 8.00	Tested	$1.50	$ 8 75	$17.00
Select untested	1 00	4.75	9.00	Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

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$2 50 A Month Buys
a Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.

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QUEENS OF QUALITY

Capacity of my yards over 1000 Queens a month

After 20 years of careful selection and breeding, I now have a strain of bees that cannot be excelled by any. My queens are all bred from IMPORTED STOCK, the very best in the world for honey gathering and gentleness. They are not given to swarming. What more do you want in bees than the three above qualities?

GUARANTEE

You take no risk in buying my queens, for I guarantee every queen to reach you in first-class condition, to be purely mated and to give perfect satisfaction. All queens that do not give satisfaction I will replace. Send for circular.

PRICES APRIL 1ST JULY 1ST

	1	6	12
Untested	$ .75	$ 4.25	$ 8.00
Select untested	.90	5 00	9.00
Tested	1.25	7.00	13.00
Select tested	2.00	11.00	20.00

L. L. FOREHAND, Ft. Deposit, Alabama

EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1.00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
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Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50 Select Tested, $2.00. The best all-purpose bee.

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Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

GRANT ANDERSON
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3-BANDED ITALIANS

From May 1 until June 1

Untested, $1.00; 6, $4.50; 12, $8.00. Tested, $1.25; 6, $5.50; 12, $10.50

From June 1 until Nov. 1

Untested, 75c; 6, $4.00; 12, $7.50. Tested, $1.00; 6, $5.00; 12, $9.00. Select tested $2.00 each. Circular free.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern bred and hardy. 25 years a Queen Breeder.

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested	$1 00	$ 5.00	$ 9 00	$ .75	$ 4.00	$ 7.00
Tested	1.50	8.00	15.00	1.00	5.00	9.00
Select tested	2,00	10 00	18.00	1.50	8.00	15.00
2-comb nuclei	2.50	14.00	25.00	2.25	12.00	22.00
3-comb nuclei	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colonies	6.00	30.00		5.00	25.00	
10-frame colonies	7.50	38.00		6.00	32.00	
½-pound package bees	1.50	7.00		1.00	5.00	
1-pound package bees	2.00	10.00		1.50	8.00	

BREEDERS.—The cream selected from our entire stock of outyards; nothing better. These breeders $5.00 each.

Can furnish bees on Danzenbaker and Langstroth or Hoffman frames.

Above price on bees by pound, nuclei, and colonies does not include queen You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out until first of June. Also nuclei and colonies, if wanted before June 1, add 25 percent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit Send for testimonials. Orders booked now.

Reference any large supply dealer or any bank having Dun's reference book.

H. G. QUIRIN, Bellevue, Ohio

BEES

If you are thinking of buying bees this spring, we would be pleased to hear from you. We furnish full and nucleus colonies, bees by the pound, and queens.

A strong colony of Italian bees with a tested Italian queen, in a new 8-frame dovetail hive, complete with super, for $11.00. Tested Italian queens, $1.50. Untested, $1.10.

Our catalog of bee supplies, honey jars, and everything a beekeeper uses, mailed upon request.

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Home Apiary: Glen Cove, L. I.

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Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 206 sections and gave two swarms. I am well pleased. MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested............75 cts. each; $65.00 per 100 | Tested.......$1.25 each; $110.00 per 100
Select untested.....90 cts. " ; $75.00 " 100 | Select tested 1 50 " 125.00 " 100
Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

The Double-Walled Massie Bee-Hive

THE KRETCHMER MF'G.CO.
COUNCIL BLUFFS, IA.
MANUFACTURERS OF
THE MASSIE
PATENT
DOUBLE WALLED
BEE HIVE

THE MASSIE HIVE
For Comb or Extracted Honey

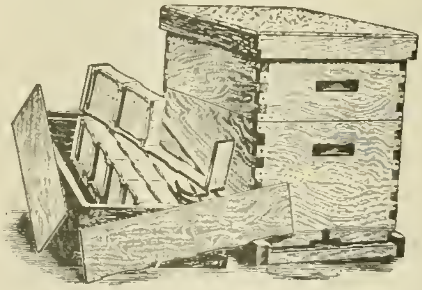
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

Mr. Beekeeper!

HAVE YOU SEEN IT?

The Article Beginning On

PAGE 692

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THE ABC and XYZ OF BEE CULTURE?

If you have even five colonies of bees, this article alone will save you several times the price of the book. And this is merely one of the many valuable articles which you can't afford to miss.

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We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin

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Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

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ECONOMY TO YOURSELF
ECONOMY TO YOUR BEES

Are two essential points gained by using

Dittmer Process Comb Foundation

Because it is the same TASTE, and the same SMELL, and the same FIRMNESS, as the COMB the Honey-bees make themselves. It is the more acceptable to them because it is not like their OWN COMB.

Remember, Mr. Beekeeper, that to you HONEY IS MONEY—then use

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Work for a full-capacity honey crop

Send for Samples—All Supplies at Prices you Appreciate

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BEE ESCAPE
SAVES
HONEY
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For sale by all dealers.
If no dealer, write factory
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Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
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Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1.00 each; doz. $9.00 Choice tested, $1.50 each Breeder, $3.00 to $5.00 each

C. S. ENGLE, Beeville, Bee Co., Texas

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917 list free.**

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

"Signed Lumber is Safe Lumber."

It's a pretty good idea (now that the lumber mills in the Southern Cypress Manufacturers' Association are IDENTIFYING EVERY CYPRESS BOARD THEY SAW) to MENTION TO YOUR LUMBER DEALER, CONTRACTOR or CARPENTER—and to ASK YOUR ARCHITECT to SPECIFY—that YOUR CYPRESS MUST BE

"TIDEWATER" CYPRESS
IDENTIFIED BY
THIS TRADE-MARK
Stamped in the End of Every Piece
or APPLIED TO EVERY BUNDLE

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No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH. IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS"

Let our ALL-ROUND HELPS DEPARTMENT help YOU *MORE*
Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association
1251 Hibernia Bank Bldg., New Orleans, La., or 1251 Heard Nat'l Bank Bldg., Jacksonville, Fla.

INSIST ON TRADE-MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, LET US KNOW

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

WE ANNOUNCE AN ADVANCE

Of 5c per pound on comb-foundation. This advance applies to all our 1917 price lists. On account of the high price of beeswax, we are compelled to withdraw our former quotations.

For beeswax, we will now pay 35c in cash or 37c in trade f. o. b. Hamilton, or Keokuk, Iowa. Prices of beeswax and foundation are, of course, subject to change without notice.

Save your beeswax and ship it to us to be worked into foundation for you. Send us your old combs. They are worth good money now, and we will get every ounce of wax out of them and pay you the above prices for your share of the wax.

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

JUNE, 1917

4 - 191
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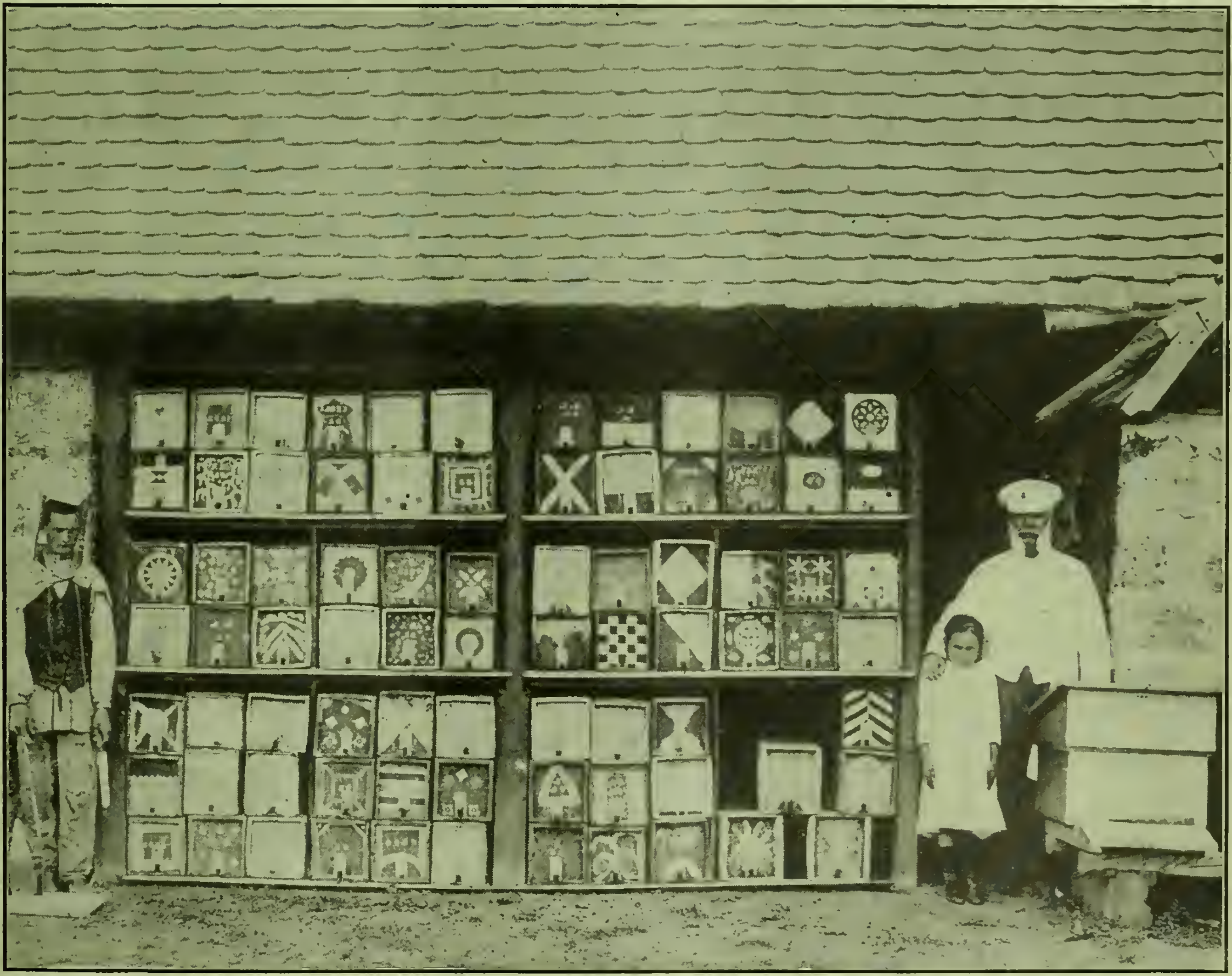


Kanaroff Apiary, Borchalinsk County, Tiflis, Russia

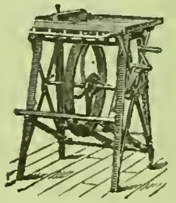
About 80 hives of bees painted in different designs to enable the bees to recognize their home. New methods are being adopted. Note the Bingham smoker and Alexander veil at the left and the Dadant hive at the right. This is the first of a series of pictures of Caucasian apiaries which will apppaar in our columns

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association
1424 Market Street, Denver, Colo.

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

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995 Ruby St., ROCKFORD, ILLINOIS.

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THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for circular and Price list.

BEN G. DAVIS
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POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to
AMERICAN BEE JOURNAL, Hamilton, Ill.

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You will save money and freight on your 1917 foundation by shipping us your beeswax and paying only for its manufacture into **"superior foundation."** (Weed process.)

OLD COMBS AND SLUMGUM

Send them along; for the lowest freight rate bill as "beeswax refuse." Our steam process removes every ounce of wax. We render on shares.

SUPERIOR HONEY COMPANY
Ogden, Utah

ITALIAN QUEENS AND BEES

I am better able to supply the trade with my Three-band Italian Queens, Colonies and Nuclei than ever before. Send for circular and prices.

E. A. Leffingwell, Allen, Michigan

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in June and July at the following prices, viz.:

FROM PENN. MISS.

Prices 1 and over	1	6	12	25 to 100
Untested	$ .85	$4.50	$8.00	$ .65 each
Warranted	1.10	5.00	9.50	.75 "
Tested	1.50	7.50	13.50	1.05 "
Breeders	3.00 to $10.00 each.			

FROM TORONTO, ONTARIO.

	1	6	12	25 to 100
Untested	$1.00	$4.80	$9.25	$ .75 each
Warranted	1.35	5.80	10.75	.85 "
Tested	1.75	7.80	14.75	1.15 "
Breeders	3.00 to $10.00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

FROM PENN, MISS.

	1 to 5 each	6 to 25 each	over each
1-pound and Queen	$2.25	$2.00	$1.90
2-pound and Queen	3.00	2.75	2.65

FROM TORONTO, ONTARIO

	1 to 5 each	6 to 25 each	50 over each
1-pound and Queen	$3.00	$2.75	$2.65
2-pound and Queen	4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO, ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us.

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request

THE PENN COMPANY, PENN, MISS., U. S. A.

Bee Supply Department

Orders shipped day received

Our warerooms are loaded with Lewis Beeware

Everything at factory prices

Send for catalog

Wax Rendering Department

We do perfect wax rendering. It will pay every Beekeeper to gather up all his old combs and cappings and ship to us. We charge 5c a pound for the wax we render and pay the highest cash or trade price.

THE FRED W. MUTH COMPANY
(*The firm the Busy Bees work for*)

204 Walnut Street, - - CINCINNATI OHIO

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10.00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1 frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

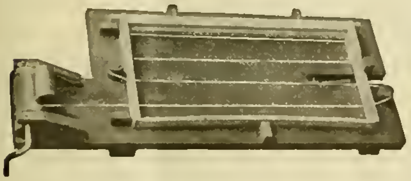
To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex.

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois



PATENTED
WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world, They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

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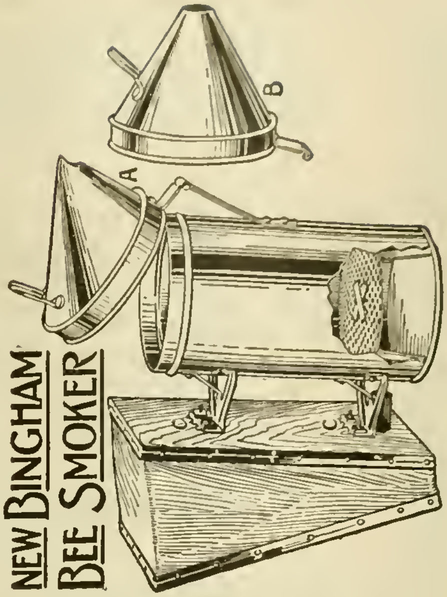
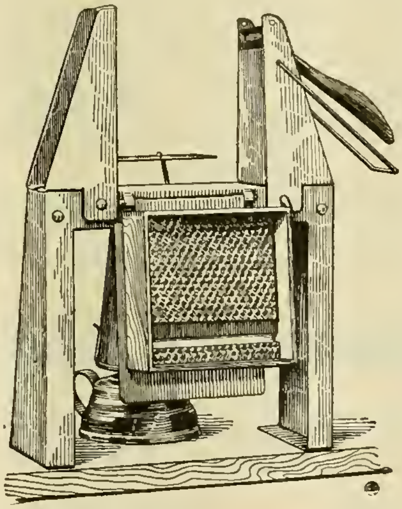


A. G. WOODMAN CO., Grand Rapids, Michigan



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Crates holding	....	....	....	50	50
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2½-lb. cases of 24 per case	1.30	1.25
5 -lb. crates of 100 per crate	7.75	7.40
5 -lb. crates of 200 per crate	15.00	14.75
5 -lb. cases of 12 per case	1.10	1.05
10 -lb. crates of 100 per crate	11.50	11.00
10 -lb. cases of 6 per case	.85	.80
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As our contract with the tin can company closes on July 1st, your orders should reach us not later than June 20th, so as to give us ample time to place your order with the factory. After July 1st, prices will advance to a considerable extent.

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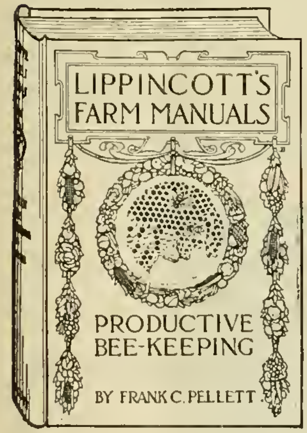

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American Bee Journal, Hamilton, Illinois

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Watertown, Wisconsin

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 6 HAMILTON, ILL., JUNE, 1917, MONTHLY, 1.00 A YEAR

The Centenary of Charles Dadant

CHARLES DADANT, whose portrait was given the place it now occupies at the head of the columns of the American Bee Journal, by the former editor, in June, 1906, in company with that of Father Langstroth, whom he seconded and supported eagerly in the advancement of beekeeping, was born at Vaux-Sous-Aubigny, a village on the confines of Champagne and Burgundy, May 22, 1817, just a hundred years ago. A short account of his life, showing the obstacles he met and the success he finally achieved, may encourage some of our young men, who are similarly laboring under difficulties, to keep up the struggle and perhaps also succeed.

He was given an education for the purpose of becoming a physician like his own father. But he had the tastes of a nature lover, or, as he explained it himself in homely words: "J'avais des gouts de paysan" (I had the inclinations of a peasant). That is to say, he loved life in the fields and the woods, plants, flowers, bees, birds, etc. He learned early how to graft, and when about 12 years old amused himself by budding beautiful varieties of roses upon wild rose bushes in the woods, so that a few years later, while roaming the woods with some boys and girls of his age, he astonished the girls and pleased them by leading them to a harvest of most beautiful roses, in a remote corner of the forest.

His liking for bees inducel him to own bees early. In the American Bee Journal of 1868, the third volume, he gave interesting reminiscences of his amateur beginnings in beekeeping.

VAUX sous AUBIGNY - Place de la Fontaine
Edit. L. Reuzel

THE SAME SPOT IN 1913, VIEWED FROM THE OTHER SIDE

CHARLES DADANT'S BIRTHPLACE

LANGRES—ONE OF THE OLD FORTIFIED CITIES OF FRANCE

Circumstances and the necessity of earning a living compelled him to go into the wholesale dry goods business, first as a clerk and later as a partner in the firm, located in the ancient city of Langres.

This old city, built by the Romans, under the name of Andomatunum, over 2,000 years ago, is situated on a high plateau which makes the continental divide of the French streams running to the Mediterranean, the Atlantic and the North Sea. The city towers above the surrounding country, is surrounded with high walls and is therefore inaccessible to ordinary railroad lines. It was once the capital of the Lingones, a Gallic tribe. It was a fine center when stage coaches ascended to it by a winding road. But the advent of the railroad, in 1856, which benefited the cities of the valley, left the proud fortress in isolation. Business went down and the wholesale dry goods firm had to close its doors. Seven years later, Mr. Dadant, reduced to poverty, emigrated to America with his family and settled in Hamilton, hoping to be able to follow his old love for country life and intending to grow grapes, the principal crop of the land of his birth and especially of his native village in Champagne.

But grapes proved unprofitable. In 1864 he obtained from a friend two hives of common bees in ordinary boxes. These he transferred first in the clumsy movable-frame hives he had known in Europe. A little later, having read in the American Agriculturist of the success of Quinby, he procured his book, then that of Langstroth, and finally transferred all his bees into Quinby hives, which he later enlarged and improved into what is now the Dadant hive.

His first years in America were very strenuous. He had no knowledge of English and was 47 years old, at his arrival here. With uncommon tenacity he decided to learn English by his own effort as he had learned to

CHARLES DADANT AT 30, IN 1847

CHARLES DADANT AT 55

graft roses in his boyhood. He bought a pocket dictionary and subscribed to the New York Tribune. Having no other way of learning the news, he slowly and persistently translated the information of the weekly happenings with his dictionary. Within a short time he was able to read from an American paper the current news so readily that he often read them to his wife in French as if the paper had been printed in the French language. That quick grasping of the language enabled him to write for the American Bee Journal, as soon as he began receiving it.

In 1867, his apiary increased rapidly, so rapidly that he found himself short of empty hives and needing more. Lumber was high and his purse was empty, so he tore up the floor of an attic which was made of wide boards of one-inch lumber, in the log house inhabited by the family, to procure lumber for hive making. The reward came the following year, 1868, when he harvested his first large crop. We have no data as to its quantity, but it amounted to several thousand pounds and honey sold at a high price then.

In 1872 Charles Dadant made a trip to Italy to secure Italian bees. He had bought his first Italian queen in 1866, of an Ohio breeder, A. Gray. Then he tried importing, succeeding fairly well with Dr. Blumhoff, of Biasca, Italian Switzerland. But the death of this able breeder and repeated failure with other men, determined him to cross the ocean himself. He had been writing articles on American beekeeping which were appreciated and was made an honorary member of the Italian association. So he was already well known, and this was sure to help his success. But nevertheless, the importations of that year were a dead failure. However, failure spells success for the indomitably persistent man. The faults had been discovered, the proper methods traced. In 1874, after careful instructions, followed with great exactness, Florini, of Monselice, succeeded in sending him about 100 queens with less than 5 per cent loss. Italian queens direct from Italy were supplied to nearly all the American breeders within two or three years. Long before that time, Parsons, Langstroth, Grimm and others had made importations, but none on so large a scale and none so successfully and cheaply, for Adam Grimm imported his Italian bees in full colonies at great expense. But others soon followed. Jones, of Canada, made a trip to Egypt, Cyprus and the Holy Land and various races of bees were brought to America.

Charles Dadant was an indefatigable writer. Anxious to see the Europeans adopt the practical methods of our successful teachers, Langstroth and Quinby, he sent articles on beekeeping to the French, Swiss and Italian bee magazines. Hamet, the publisher of the French "Apiculteur," ridiculed him, but Mr. Dadant overwhelmed him with such convincing arguments and sarcastic replies to his taunts that he finally refused to forward his magazine to him. He lived long enough to find himself flooded with the American methods, and when he died his little magazine had given in to the current of beekeeping progress. Bertrand, the Swiss publisher who only lately died, began in 1879 the publication of a "Bulletin d'Apiculture" of which Mr. Dadant was one of the principal contributors and the name of which, at his suggestion, was later changed to that of "Revue Internationale D' Apiculture."

In 1874 Mr. Dadant published in the French language a "Petit Cours d'Apiculture." In 1885, Mr. Langstroth, who was unable to continue the revision of his classic work "The Hive and Honey Bee," was advised by Chas. Muth, of Cincinnati, to put this work in the hands of the Dadants. The intention was to have the work done under the supervision of Mr. Langstroth. But an old nervous trou-

CHARLES DADANT AT 83

MRS. CHARLES DADANT AT 25, IN 1847

ble, which had compelled him for years to abstain from all brain work, again stopped this project. The accompanying manuscript letter explains how, after making arrangements for the revision, Mr. Langstroth was compelled to leave this work entirely to his revisers.

The first edition of the Langstroth-Dadant "Hive and Honey Bee" was published in 1888. In 1891, a French translation by Charles Dadant, was published in Geneva, Switzerland, under the management of Edouard Bertrand. This has gone through one revision and three editions. A Russian translation by Kandratieff, of Petrograd, was published in 1892, of which four editions have appeared. A Spanish translation by Pons-Fabregues, of the latest revision, was published in Barcelona, in 1915.

In 1895 Mr. Dadant lost his loving wife, then aged 73 years. He lived till July 16th, 1902, surrounded by his children and grandchildren, with the satisfaction of seeing the full success of his undertakings and a continuation of his work in the younger generations.

yours respectfully
Chas Dadant

CHARLES DADANT'S MOTHER, IN 1865

An Amusing Incident in Connection With Bee Escapes

BY G. C. GREINER.

WHEN taking off supers by means of the bee-escape it sometimes happens that for one reason or another bees have not made use of the escape as the beekeeper expected they would. As a rule, I apply the escapes during the latter part of the day, and find my supers generally free from bees the next morning. But if they have not left their supers by that time, we can be quite sure that there is something wrong, either with the escape or with the bees. A few scattering bees in a super does not matter. There are always a few stray ones. But when I find a super full of them, when I see at first glance that there is trouble of some kind, I simply cover such supers up again and leave them until the next day. That most always clears them, unless the escape has become clogged or there is brood in some of the sections.

Last fall, when sorting the contents of some of my last supers, I found one super from which, it seemed, hardly any bees had passed through the escape. Some of the sections were completely covered with bees, while others had only scattering ones. To gather up my supers I run the wheelbarrow along the back of the hive rows, where on the previous night the escapes have been placed and load them one after another onto the rig. When the load is completed—I generally take four or five at a time—I take them to the honey house and set them endwise on the floor near the screen-door. The few bees that are left in the supers usually take wing and go to the screen-door by the time I am ready to look their super over.

When I gathered up one of my loads I had not noticed that one of the supers contained so many bees until I was about to empty it. Under similar circumstances I had often taken sections to the door and with a feather brushed the bees outdoors. The same I intended to do with these; but being so many more to handle I took the whole super outdoors and used the first hive as a table on which to set the section holders during the operation. As the brushing off proceeded I noticed that the bees, as they took wing, did not immediately take a line towards their hive, but kept hovering around me a little more than natural. However, I did not consider that very strange as bees under similar conditions always act somewhat bewildered before they get straightened up.

Just then I was called to dinner. When I entered the house my daughter met me at the door, and looking me over wonderingly said: "Father, what is the matter with you, you are all covered with bees." "Well," I replied, "what of it, sweep 'em off." So, she taking a wing, we both stepped onto the veranda to proceed with the sweeping off. She had hardly begun her task when again she remarked: "Yes, and the bees are all under your sweater." These words had hardly left her mouth when in greatest wonderment she exclaimed: "Well! I declare, your hip-pocket is full of bees." And, sure enough, I could hear them buzz.

That was a nice predicament, and to dispose of that pocket full of bees was somewhat of a puzzle. To dislodge them would have been an easy matter by shaking the garments upside down, if I had not been in them, but I could not very well shake myself with my feet in the air. After considering and debating the situation most thoroughly I finally decided to go back to the honey house where I could separate myself from any or all of my garments unmolested. This accomplished, it was comparatively easy, standing at the open door, to shake the bees outdoors, although scantily attired as I was, the situation was none too enjoyable; at times a little more protection to my anatomy would have been more acceptable.

A solution to the strange behavior of the bees in this case is not difficult to find. Undoubtedly the queen was in that super when it was taken from the hive, and when the bees were swept from the sections she, too, had to take wing. Accidentally she lit on my body near the hip-pocket, and its bee scent (I always carry my hive-tool in that pocket) attracted her in that direction to look for a hiding place. Having once entered the pocket it was only a natural consequence that the bees followed her.

La Salle, N. Y.

Second Hand Cans

BY A. F. BONNEY.

A YEAR ago I conceived the bright idea that I could so fix my tin containers that they would not rust, and thereby save them. Honey, I argued with myself, is always slightly acid, enough so that it will redden blue litmus paper at a temperature of 70 degrees in far less than one minute. It is this acid which attacking the tin, rusts it, far sooner, at any rate, than moisture will.

The cans we use are but thinly coated with tin, just enough of the metal to protect the steel a reasonable time, and when drained will soon eat out, exposing the steel to the action of air and moisture.

I took a new can, put into it a lump of paraffin, enough, I thought, to cover the bottom and an inch of the sides, melted it over a hot fire, rolled the can about and set down to cool. I next put in some honey and poured it out. I recently dissected this can, and the protected parts were as clean and bright as when new. At the same time I took a second-hand can, washed it, dried it well over a good heat, and coating it as was the first one, treated it the same. The result was the same.

I see no reason why we cannot coat the whole inside of the tin containers, and thus make them available for second and even third use. The expense would not exceed, for wax and time, two cents per can, but if ten cents it would still be a good investment.

Buck Grove, Iowa.

[The experience of Mr. Pellett at Chicago, where he found that honey in second-hand cans sold for 2 cents less per pound than that in new cans, would indicate that unless we can make our cans look new on the outside as well, it is a loss of money to use second-hand cans. But they can probably be used for other purposes, and Dr. Bonney's idea may help save them.—EDITOR.]

Fermenting Honey

BY W. D. NULL.

MR. EDITOR, I notice in your write-up in the April number, your visit to Mr. Kenyon, that he has trouble with "ferment in the cells." Is he sure it is a ferment? Do all gases come from fermentation? That is a very live question in this section, and has been since we have produced honey crops here. It shows here every year, some years worse than others. We have thought it came from a plant, and for a long time blamed it to cotton honey and also to several other plants. We also put the blame on the weather, but had to abandon that idea also.

We simply do not know where to put the blame. It costs this section thousands of dollars. That it is not a ferment I am sure, as we extracted samples and sent to the Department of Agriculture at Washington to examine. We sorted out all the extracting combs in one part of one yard that showed the "blow out," as the boys call it, and extracted a 600-pound tank of it. After letting it stand some weeks, we sent one 2-pound sample from the top of the tank and another from the bottom and asked Dr. Phillips to have the chemists find out what was the trouble. They sent back an analysis of both samples and pronounced it of good quality and nothing wrong with it, and yet the foam rose several inches on top of that tank. The honey was good, but it spoils the appearance of sections, as it blows out the cappings and leaks out. I have known a 13-ounce section to leak out to 4 ounces.

When it is extracted and used liquid, it seems all right. But when it granulates, it generates enough gas to blow out the lids of friction-top cans. When it is liquefied it is all right again until it commences to granulate again. It granulates very quickly.

It seems to me this is a chance for the Department of Agriculture to put some investigator to work to the advantage of a big section of country. We have so many plants here that are common in New York and so many that are not, that by checking one locality against the other the guilty plant may be found out and the trouble may possibly be overcome. There are many plants upon which our bees work that are not identified in the crop and may yet have an influence on the results.

Mr. Harte, who had charge of the Allenville yards, where he produced one year 19 tons of honey from 500 colonies, lost heavily from the "blow out" that year. He spent a great deal of time for six years trying to find the cause, but he died as ignorant of it as the rest of us.

Demopolis, Ala.

DR. FRANCOIS DADANT, FATHER OF CHARLES DADANT.

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Oldest Bee Paper in America
BEE JOURNAL

PUBLISHED MONTHLY AT
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Entered as second-class matter at the Hamilton, Illinois, Post-office.
C. P. Dadant, Editor.
Dr C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

The Sugar Situation

The condition of the sugar market has a great influence on the honey market, as every one knows. The Bureau of Crop Estimates at Washington furnishes a report of sugar conditions, production, imports and exports. It is too lengthy to find place in our columns, but a few facts gleaned from it will be of interest. The consumption of sugar in the United States from 1913 to 1916 inclusive, has been 80.7, 90, 84.4 and 81.2 pounds per capita. During that time, the production and imports have steadily increased from 6,590,000,000 pounds to 7,618,000,000. But the export in 1916 over 1915 is 584,000,000 pounds greater. So the stock on hand is reduced. Besides there is a probability of great demand in Europe, and unless submarine activities make the exports unsafe, there will continue to be an increased demand.

We can conclude safely that, although no shortage of sugar need be feared, the price will probably remain firm and the demand good. Firm prices in sugar will make firm prices in honey without doubt.

New Bee Books

Two new bee books have recently been issued from the American Bee Journal press. "First Lessons in Beekeeping," by C. P. Dadant, editor of this Journal, was issued early in the year. Although the book retains the same title as the old book published by George W. York & Co., of Chicago, several years ago, it is in fact entirely new. This is entirely rewritten and is not a mere revision. Some of the larger volumes go into detail with so many different methods of doing the same work as to confuse the novice. This book, which contains 167 pages, is nicely bound in cloth, is designed to give the fundamentals which every beginner is bound to know in order to be successful. There are 178 illustrations which explain the text fully.

The book begins with the natural history of the bee. After describing the bee family and outlining the part played by the different members in the economy of the hive, the products, honey, wax, propolis, pollen, etc., are described.

The reader is led along easy stages from the bee family to the establishment of an apiary, care of the bees and the selection of equipment. No important part of the beekeeper's program is overlooked. Simple directions for harvesting the crop, wintering the bees and detection and treatment of disease are given.

The second book is "A Thousand Answers to Beekeeping Questions," by Dr. C. C. Miller, associate editor of this Journal. All our readers are familiar with the Question and Answer Department conducted by Dr. Miller for more than 20 years. The novice and man of experience have alike brought to this department their most perplexing problems with the result that a wonderful fund of beekeeping information has accumulated in the files of the American Bee Journal. Since the back numbers are accessible to but few, and to find the right number to reach a specific problem is not easy even to those having the files, it seemed desirable to rearrange this material in convenient form. The task of covering all the issues since 1895, and sifting out the questions most frequently asked, together with all others of general interest fell to Maurice G. Dadant. Some questions have been answered dozens of times, and the answer covering the ground most completely has been chosen. Some subjects are discussed from several different angles, thus coving the ground very fully. The subject of increase occupies eight pages, answering 22 questions. In addition several more pages are devoted to swarming and swarm prevention.

One is surprised to find the amount of information that has been crowded into this book. It is not designed to supplant the text books but to supplement them. The beginner would hardly find it just the book to read through, consecutively, to learn the fundamentals of beekeeping, but after reading the "First Lessons in Beekeeping," he will find it just the thing to answer the questions that will present themselves daily.

Doctor Miller's "Thousand Answers to Beekeeping Questions" is a cloth-bound book of 276 pages. The two books will make a capital combination for any beginner, and every beekeeper young or old will find the answer book of everyday service. F. C. P.

Getting Crop Reports and Prices

We call the attention of our readers again to our crop and market page in the back part of this magazine. The general trend of all food prices is upward and the price of honey is bound to advance with them.

The collection of prices and price ideas on honey is sometimes a puzzling matter, since some few reporters tend to make the situation look roseate or glum, to suit selfishly their own ends.

For instance, in our last reports we had two from beekeepers announcing that prospects were the brightest ever that the crop would be phenomenally large and the prices of honey correspondingly low. Both of these reporters suggested 7 cents as a liberal price for white extracted honey. Had we not known that both of these parties were in the market ,for many cars of honey, the influence on our summary would have been greater. No doubt that there are many also who will report when they have good crops, but neglect to report when the crop is a failure.

We have had some suggestions that we publish reports from individual sources instead of a summary. However, for the reasons given above and also because many will give more full reports when they are assured that no names will be mentioned, we believe the summary, if conducted properly, is better.

A Legal Service Department

For some time past we have been considering the establishment of a Legal Service Department of the American Bee Journal. There are many ways in which such a department may be of service to our readers. We cannot of course offer free legal services except advice, but we hope that our readers will consult us freely in regard to any legal problem that confronts them as far as it pertains to bees or any phase of beekeeping. If your town council undertakes to pass an ordinance prohibiting the keeping of bees within the limits of the town we will be glad to take the matter up with them and do what we can to protect the rights of the beekeeper. There are many other questions which we can help to answer, and this service will be rendered freely to every subscriber of this Journal.

The Service Department will be in charge of our staff correspondent, Mr. Frank C. Pellett, of Atlantic, Iowa, who is a licensed attorney in the State of Missouri, although he gave up all thought of practice ten years ago in order to live in the country and keep bees. Questions of general interest will be answered through the Bee Journal, other questions will be answered direct. Letters may be sent direct to Mr. Pellett or to this office.

Beekeepers who are interested in legislation for the benefit of the industry may also call upon us for suggestions in regard to the form of drawing bills and also organizing a campaign to get them passed. Mr. Pellett has had considerable experience in legislative matters, and should be able to give valuable assistance in such cases. It was the demand for assistance in such matters from our readers that led us to establish the Legal Service Department. On the urgent request of Iowa beekeepers we sent Mr. Pellett to Chicago to attend the rate hearing on comb honey. Our readers will remember that as a result of this hearing the freight rate on comb honey in the West was greatly reduced. At the request of prominent beekeepers we also sent Mr. Pellett to Washington in company with Mr. Root to urge upon the members of congress the importance of extension work in beekeeping. A special appropriation sufficient to place three men in the field was the result of the combined efforts of this committee and of the other beekeepers working in the same direction.

Calls of this kind are becoming increasingly frequent and demonstrate the need of a special source of information and assistance in such matters. President Jager, of the National Beekeepers' Association, has recently reappointed Mr. Pellett, as a member of the legislative committee of the National, and has outlined a rather elaborate program of work to be undertaken for that organization in the interest of beekeeping.

It should be borne in mind that we do not propose to start new things or promote litigation, but only to offer assistance in bringing to a successful termination such efforts as have been undertaken by the beekeepers and in which they manifest an interest. There are several States which have no inspection laws; there are places where the beekeeping interests should be protected from fruit growers who spray while trees are in bloom, there are questions of freight rates, adulteration and misbranding of honey and many other problems affecting the beekeeper which need attention. When you meet these problems we offer you our assistance.

College Work in Beekeeping

Mr. Pellett announces to us that Prof. Millen has now 75 girls taking the special course in beekeeping at Ames College. Let the good work go on.

The Price of Beeswax

The price of beeswax is greater than it has been since 1884, or for 33 years. Its high price then was caused by the new use of comb foundation. But the high prices lasted only a few months. Now, although beeswax is fairly abundant, its price is evidently a reflection of the price of all commodities.

This is a two-edge sword, for if the beekeeper secures a remunerative price for his beeswax, he has to pay also a higher price for foundation. But it indicates a tendency to the firmness in price of honey for the coming winter.

Inspection in Michigan

A circular letter to Michigan beekeepers from their inspector, Mr. B. F. Kindig, announces that there is available for inspection $1500 more than in 1916. This money becomes available July 1.

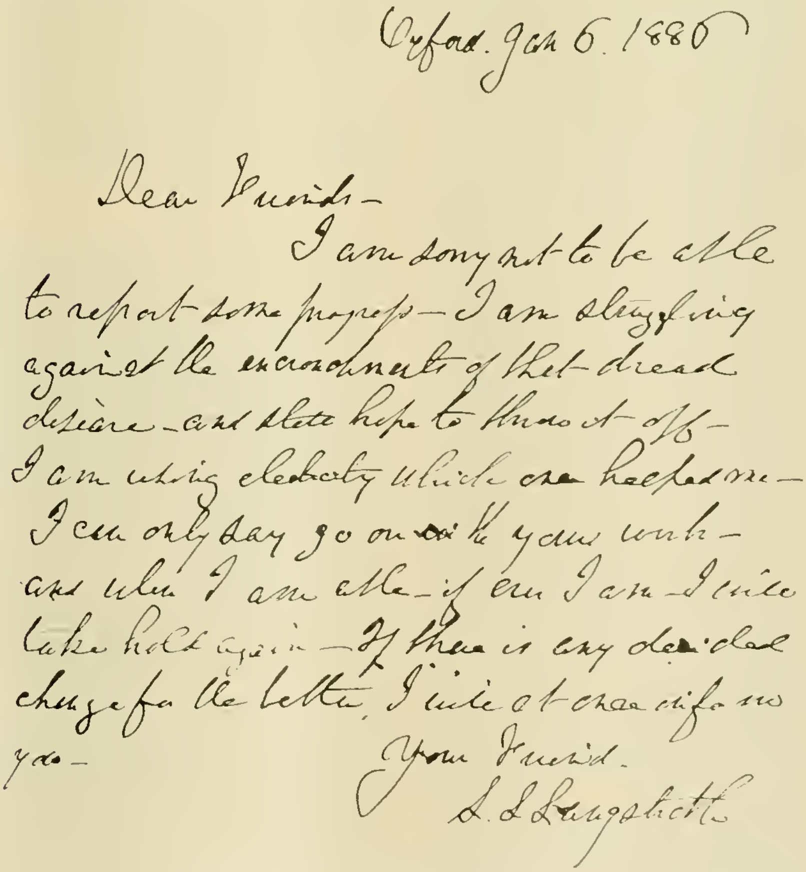
There is also a new law in Michigan making it a misdemeanor punishable by fine to keep bees in box-hives or hives with crooked combs.

Wide Spacing for Extracting

Since the Bee Journal advised wide spacing of combs in the extracting super, I use only seven frames for the eight-frame hives, and I find that this is a gain. The bees will build the combs very thick, and I find that in this manner seven combs will give even more honey than eight combs in the same super would have given. Besides this, I need to uncap only seven combs in the eight-frame hives, and should I be short with combs, then I am able to supply eight supers instead of seven, with the same number of combs with no shorter crop of honey from this source.

BRO. AL VEITH.

St. Meinrad, Ind.



Oxford. Jan 6. 1886

Dear Friend—

I am sorry not to be able to report some progress— I am struggling against the encroachments of that dread disease— and still hope to throw it off— I am using electricity which has helped me— I can only say go on with your work— and when I am able— if ever I am— I will take hold again— If there is any decided change for the better, I will at once inform you—

Your Friend.

L. L. Langstroth

LANGSTROTH'S LETTER TO CHAS. DADANT REPORTING INABILITY TO HELP IN REVISING HIS BOOK

The New Iowa Law

BY FRANK C. PELLETT.

IN my Fifth Annual Report as State Bee Inspector of Iowa, I proposed that some radical changes be made in the inspection law. It was proposed that the appointment of the inspector be taken out of politics and left to the State Board of Education the same as all college professors are selected. It was further proposed that a man be employed on full time and that questions of marketing, wintering and other beekeeping problems be given the same attention that is given to the control of disease. When the proposed changes were presented to the Iowa beekeepers at the State convention it was distinctly stated that under no circumstances would I be a candidate for the new position, as I did not wish to seem to be striving to make a better position for my own benefit.

After the beekeepers had endorsed the proposed change in the law the matter was taken up with the Attorney General and the President of the Agricultural College, and a bill drawn which covered the ground of the proposed changes and yet which eliminated things to which either the Attorney General or the college objected. It was only the day before adjournment of the Legislature that the final action was taken when a conference committee of the house and senate harmonized a difference in regard to the appropriation for the support of the work. Their report was adopted by unanimous vote of both houses.

Since there is some misunderstanding of the things which I first proposed and which the new law provides for, judging by the editor's comments and also those by Mr. Bender, it may not be out of place to give some details of the provisions of the new law which carries out the suggestions as made in my report to the governor.

On page 232 of Productive "Beekeeping," I made this prophecy: "Within a few years the inspection work, instead of being under direction of a separate State department, as now in many States, will be organized in connection with extension work in beekeeping."

Iowa, as far as I know, is the first State to adopt this plan. Judging from the comments that have appeared in the American Bee Journal, there seems to be an impression that we proposed to abandon inspection for extension. (See page 92). Rather have we proposed that it be enlarged and that the limited funds available be expended more efficiently by giving demonstrations to groups of beekeepers rather than by going through every hive in a certain limited number of apiaries. Our new law requires the State apiarist to inspect bees suspected of being affected with foulbrood or other contagious or infectious disease common to bees, on written request of one beekeeper. The old law required such request to be signed by at least three beekeepers. The new law provides a penalty or fine of $50 or 30 days imprisonment in the county jail for failure to give proper treatment.

I did propose that the State office of bee inspector be abolished, and the inspection work placed under direction of the college. It was the political office which I suggested to be abolished, but I did not at any time propose that the work be *abandoned*. Misleading statements appeared in the newspapers and some misunderstanding has resulted. A careful reading of my Fifth Report should make it clear that at no time was it intended to do away with inspection entirely.

In addition to the provision for inspection, we have the added advantage of being able to call for assistance in marketing, wintering, or other problems in the care of the apiary or the production of honey.

There were some dangerous provisions in the old law. The appointment was left to the governor, and might easily have been given as a political reward, as is too often the case with appointive offices. Some other provisions of the old law, which might easily become a menace rather than a protection to the beekeeper, have been removed. The inspection laws in several of the States contain provisions which are unconstitutional in the opinion of very able lawyers, and if put to the test in the courts, they are quite likely to be overturned completely, leaving the beekeeping interests without protection. All these things have been considered in drawing the Iowa law, and, while it is not yet all that may be desired, we feel that it is a long step in advance for Iowa beekeeping interests. The old law remains in effect until July 1, at which time the office of bee inspector as at present constituted goes out of existence and the present inspector will be relieved of further responsibility for the work.

The new official is to be designated as State Apiarist, and is to be appointed by the State Board of Education on the recommendation of the director of agricultural extension and the professor of entomology of the college of agriculture. The college authorities have not yet announced their selection of a man to fill the place. It is very probable that a man already connected with the institution will be selected.

Atlantic, Iowa.

A Foundation Foulbrood Cure

BY A. F. WAGNER.

I CALL my method the "Wagner Foundation Foulbrood Cure" because the one and the same frame is used in every manipulation. In introducing this method for the cure of American foulbrood, I want to state that I have tried every known method advocated the last 15 years, both with and without drugs, having been inspector of apiaries for nine years. I found drugs an absolute failure.

The McEvoy treatment is all right when properly done. But it caused so much confusion from absconding and from stray bees entering healthy colonies that I gave it up. How many people make the remark: "The colony I treated is all right but I have several new cases." Exactly as I stated, too much confusion, bees from diseased colonies entering healthy colonies loaded with honey. The secret of the whole thing is to remove the diseased comb and honey with the least confusion possible.

METHOD OF TREATMENT.

Never undertake to treat diseased colonies unless there is a reasonable flow of honey coming in, neither do any work at night, as in this treatment it is not necessary. On the first day remove all combs and honey *except the brood*. This should ordinarily leave five or six combs with brood. *Insert in the center of this one frame containing about two inches of comb foundation.* Leave in this condition about 48 hours. By the end of that period the foundation should be well drawn out and you are ready for the next operation. Now place a new or clean hive containing full sheets of comb foundation in the old location. Shake all the bees from the diseased comb and hive into this. Place *the frame containing the drawn comb foundation* in the new hive next to the wall. This should by this time be drawn out considerably. The diseased combs should be treated by the usual method. If you are prepared to melt this into wax by having proper utensils, well and good, otherwise burn them. By all means take no chances. Now you are to wait another 48 hours when you are to remove the *frame containing the two inches of comb foundation* and the two adjoining frames.

If you have followed the directions you may be absolutely certain that the disease is cured. Your bees have not been greatly disturbed, as they have had no such radical treatment as would cause confusion or the tendency to abscond. They have consumed all the diseased honey in drawing out the comb foundation, and with the consumption of the honey the disease disappeared.

Let me dwell a little longer on the *frame containing the two inches of comb foundation.* This is the entire secret of success. It answers a double purpose; first, prevention of absconding; second, storage of diseased honey which is removed in the last operation. Therefore, your success depends upon *the frame.* The strength of the colony will tell you how many combs should be removed with this frame at the last treatment; usually one or two is advisable, never remove more.

In writing this I take it for granted that you are familiar enough with bee diseases that it will not be necessary to describe the symptoms. If you are in any doubt, call for the inspector. Above all be sure you are certain of the disease. This is an absolute cure for American foulbrood.

Imperial Valley, Calif.

Treatment of Foulbrood

BY GALE H. PATTERSON.

I HAVE read with much interest the article by J. L. Byer on American foulbrood in the American Bee Journal of November, 1916, and am surprised that he should still recommend the old method of shaking bees on starters and shaking again at the end of three days onto full sheets of foundation, as I supposed that this treatment had become obsolete in the east, and other method taken its place as they have in Colorado. We used this method for several years, as it was the only treatment we knew of at that time, and while it almost invariably effected a cure, we found that about half of the treated colonies would abscond after the second shake.

We tried using a piece of queen-excluder zinc over the entrance, and still they frequently would abscond leaving the queen and a few drones inside the screen. It seemed that the first shake would throw the bees into great consternation from which they would have just about recovered, when on the third day they were again shaken from their pretty drawn combs, leaving them in a condition so discouraged and hopeless that they were slow to begin work again if they did so at all.

We lost so many colonies in this way that sometimes when crowded to the limit with work, it was a question whether it would not pay to destroy the diseased colonies, entirely and at once, and be done with it. Some beekeepers of our acquaintance began the method of shaking diseased colonies directly on full sheets of foundation, without the second shake, but this did not always effect a cure, and to be obliged to treat them again that season made extra work besides reducing the colony to a nucleus.

About this time we heard of the starvation method and tried it at once, shaking the bees into an empty hive and screening them in and setting in the cellar for three days. This was a sure cure, for the bees always starved to death in less than three days, the most of them dying inside of two days, but after some experiments we found that starving for 24 hours always effected a cure, and we could also save the bees as they would hang quietly in a cluster like a swarm, and when given frames of foundation would go to work with great energy.

The method of treatment finally evolved always gave good results, and we now use it entirely, and when serving in the capacity of County Bee Inspector, the writer always uses and recommends this plan, as it is simple and easy and reasonably sure.

We have discontinued putting the bees into the cellar as it is not necessary, but prefer to put the new hive on the old location and cover with a shade-board. We also think it best to spread a paper or cloth in front of empty hive to shake the bees on, driving them in with a little smoke, after which the paper or cloth should be gathered up and burned.

A stick or empty frame with a small piece of burlap hung over it is a good thing for the bees to cluster on, and should be placed in the middle of the hive so that when you open up the hive next day you can slip in the frames of foundation on each side until the hive is nearly full. Then the empty frame with burlap and cluster may be shaken and the bees falling on the bottom of the hive will quickly run up on frames of foundation. The remaining frames can be slipped in, the cover put on, and you can feel sure that you have done a good job.

We do not claim to have originated this method, as it seems to be in common practice with many Colorado beekeepers and perhaps elsewhere. So I suppose that they tried different plans until they found one adapted to their requirements as we did.

Cedaredge, Colo.

Spring Management of Bees

BY E. F. ATWATER.

NOT so very long ago the writer wrote a million dollar article for a bee-publication. I was not paid a million for it, you can bank on that. Worse, probably not one reader in one hundred really grasped its value. A little out of the beaten path, you know. But take my word for it, it was a million dollar article; can make and save that amount for the beekeepers. Save time, save work, build big colonies to make big crops.

The principle is simple—abundant stores at a distance from the brood, in spring breeding time. And those stores preferably near the entrance. In this mild climate, we prepare for this in the fall. We now produce mostly extracted honey, with an average of over 1000 colonies for some years past, and as is well known, colonies run for extracted honey are often a little light in stores, so we leave two to five extra combs of honey for each colony, at the last extracting. These combs of honey are in the extracting super next to the brood-nest, and the remainder of the space is filled with empty combs. As early in the fall as possible, we "reverse," that is to say, we put the super with the extra combs of honey, underneath the brood-nest, which brings the cluster in the upper hive where heat is best conserved. Of course the colony must have stores enough in the brood-nest so they will not starve in a cold spell of winter weather. All through the fall, the bees are carrying honey from the combs below up into the brood-nest, resulting in a little later brood-rearing, some young bees for winter, and a more compact arrangement of the winter stores.

But the big gain is in the spring. Then the bees are constantly, when weather permits, carrying up stores, which encourages brood-rearing to the utmost. The bees will be far more active than in a small hive, where the stores are in compact form, all quite near the cluster, as with the stores so far from the cluster, the bees' instinct causes them to carry stores into or close to the brood-nest.

If there had been any combs the previous fall, which were new, and full of honey, too tender to extract, these are the very best to leave under the brood-nest, as such combs will be emptied and the honey carried above before the honey in old combs will be touched.

Now, when spring comes and you are working your bees, take nearly all the honey not in combs containing brood, and put it in the hive-body below the brood-nest, filling the brood-nest with first-class worker-combs. Now leave them alone. Result is that the queen has almost unlimited room to lay in the upper body for weeks to come, and with the desire to surround the brood with honey from below.

This when carried up is unsealed and in the best possible condition to favor activity within the hive; the best of results are obtained in brood-rearing. Colonies so prepared should have a small entrance. No daily fussing and feeding, but results as good or better than with any other plan of spring management, unless weather conditions should be extraordinarily unfavorable. The queen will not be crowded for room to lay nearly so soon as when stores and brood are confined to one hive-body. In this connection the writer believes that the application of the principle of stores far from the brood is one reason why large hives so often prove superior to small hives, as in the large hive there is usually a goodly supply of honey, far removed from the actual brood-nest or cluster through a large part of the spring breeding season.

Briefly, put honey from the brood-nest, in early spring, into a hive-body under the brood-nest, filling up both bodies with good worker comb for easy, profitable, best spring breeding.

The writer has seen stronger colonies by this plan than any other, and speaks from an experience of 20 years with crops as large as 80,000 to 110,000 in a rather poor location.

Meridian, Idaho.

APIARY OF E. F. ATWATER IN IDAHO
Notice that the first two rows face each other

[The only objection we can see, in this climate, to the above suggestions is the possibility of some of the colonies thus treated becoming weak by winter or spring losses and being robbed, because of the exposed honey. Bees naturally place their brood between the entrance and their stores, and would hasten to remove honey placed in an exposed situation as practiced by Mr. Atwater.—EDITOR.]

Pollination of Plants

BY L. H. PAMMEL.

I BECAME interested in bees when I was a boy on a Wisconsin farm in the late seventies, and shortly afterwards it was my pleasure to be a student in the University of Wisconsin, where I became acquainted with Dr. Wm. Trelease, the professor of botany, who had published some papers on the pollination of plants. It was during the spring of my sophomore year, when a number of students and I interested in botany took a course of lectures and laboratory work on this subject. This opened up to me a new world. I had more than once heard the name of Darwin and the great biological work he was doing mentioned in derision. To the average laymen he was known only for the work he had published on the origin of species and the descent of man. This was a new field to me. Here was a great naturalist who found "poetry" in flowers, who saw and described wonderful contrivances in plants to secure pollination. I became acquainted with the works of Hermann Mueller, Fritz Mueller, Hildebrand, Asa Gray, Sprengel and Sir John Lubbock and many other botanists who were students of flower fertilization as it was then called, later going by the name of pollination and now as flower ecology.

The subject was fascinating to me beyond measure. Not only did I become acquainted with some of our wild plants, but the insects important in pollination. For several years I studied and made observations on plants at various times. My interest in the subject has never ceased.

The sensitiveness of pollinating insects to color and to odor. It is believed commonly that odors and bright colors in flowers are of great importance as indicators (or "signals") to insects of the presence of nectar or pollen, and some observers even go so far as to suppose that these features have arisen through natural selection, the insects preferring the more fragrant and showy flowers, while others go unpollinated, so that the plants bearing them have no progeny. There is no evidence whatever for the selection theory of the prevalence of showiness and odor, and even the theory that insects are attracted by color and by fragrance rests too little on experiment and too much on the untenable assumption that theory must be true, because nobody knows any other role for the floral features. It is a tenable hypothesis that such features are without value to the flowers possessing them, and the "signal" theory deserves support only as it is proven experimentally.

It is not certain that insect attraction is the only possible role of colored corollas; it has been suggested that they may play an important part in the chemistry of fruit maturation. Pigmented plastids may be important in food making, and pigmented cell sap may indicate the formation of useless by-products. It is to be noted that some wind-pollinated flowers are very showy, as in the larch and the red maple. Corollas also are of some importance as protective organs for the pollen and stigmas, especially in flowers whose corollas close at night and in stormy weather.

The possession of a keen sense of smell by pollinating insects is undoubted, inconspicuous fragrant flowers being visited much more than are showy ordorless flowers. The readiness with which flies are drawn to sources of nauseous odors is well known, and they frequent ill-smelling flowers in a similar fashion. Hawk moths detect at a distance of several meters the presence of fragrant but invisible nocturnal flowers, and bees have been seen to fly directly toward honey artificially hidden. Indeed, there are reasons for believing that many insects are able to detect odors that are inappreciable to human nostrils.

The possession of a keen sense of color is much less certain. The only insects in which color perception has been definitely demonstrated are the honeybees. These highly organized insects often have been seen to visit gaudy but nectarless artificial flowers, and sometimes they attempt to get at showy natural flowers that are under glass. Frequently they visit colored, unopened buds and wilted flowers, the latter being at times approached, even after they have fallen to the ground. Apiarists rather generally believe that honeybees are able to perceive color differences, and hence they sometimes paint their hives in different colors, so as to aid the bees in recognizing their abode. To the extent that color is perceived by insects, it is a much more reliable "signal" than odor, since the latter often is affected by the wind or masked by other odors. Probably the characteristic forms of flowers serve as indices to nectar, especially in the case of flowers that are conspicuous by their shape or by their size; some observers think that form is even more important than color as an insect "signal."

Some investigators believe that honeybees not only perceive colors, but that they have marked color preferences. Experiments with honey on colored papers seem to show that bees tend to visit a particular color, even if others are more conveniently situated, and elaborate theories have been worked out on the assumption that bees dislike yellow and prefer blue, whence it seems to some observers an easy postulate that the day of yellow flowers is waning, and that of blue flowers is in the ascendant. Such conclusions certainly are unwarranted. The constancy of the honeybee to a given color, such as blue, does not mean a preference for blue as such, but the association of nectar or pollen with that color. If a bee commences its activities on a red flower, or on honey placed on red paper, it is constant to red.

"In visiting flowers, bees are constant not only to color, but also to form, flying from flower to flower of the same species. This constancy to a given plant species for a certain period is of great advantage to the plant, since it means a minimum waste of pollen. It is equally of advantage to the bees, since the nectar or pollen is all of the same quality, and since time and energy are saved in that exactly the same process is repeated in each flower that is visited. The collapse of the color preference theory is well shown in those cases in which different individuals of a given plant species have flowers of different colors. In such species bees soon learn the essential likeness of the differently colored flowers, going from one color to another indifferently. In other words, bees learn to ignore differences in color that are unaccompanied by differences in nectar or pollen. Even if bees prove to be the only insects with a color sense, other insects certainly are able to appreciate differences in tone, as they appear in a photographic print where whites and various colors come into sharp contrast with the darkness of the foliage. Similarly, the prevalent whiteness of nocturnal flowers makes them more conspicuous than would any pigment color."

A survey of the whole subject may be obtained from the English translation of "Knuth Handbook of Flower Pollination," three volumes published by the Clarendon Press, Oxford, in 1906. This admirable treatise has a splendid summary of the more important work done along the lines of pollination up to the year 1906. Some work has, of course, been done since by entomologists and botanists. In this country John H. Lovell and Graenicher have made a number of important contributions. The flower ecologists have lately missed the contributions formerly made by Charles Robertson, of Carlinville, Ill. Mr. Robertson greatly enriched the American literature of the subject.

The following agents are important in the pollination of plants: I. Water (Hydrophilous), Fresh Water Eel grass; II. Wind (Anemophilous), corn, wheat, rye, pine, oak; III. Animal (Zoidiophilous), birds (Ornithopilous), trumpet creeper, snails (Malacophilous), duckweed, aroids, insects (*Ernitomophilous*), clover, plum, strawberry, etc. Large bee flowers (*Melittophilous*), sage, small bee flowers (*Micromellittophilous*), parsnip, goldenrod, dogwood, small fly flowers (*Micromyiophilous*), birthwort with a temporary prison, carrion fly flower (*Sapromyiophilous*) carrion flower beetle flowers (*Cantharophilous*), many compositæ, magnolia, butterfly flowers (*Psychophidous*)), pink Sphinx flowers (*Sphingophilous*), flowers pollinated by hawk moths and moths (*Noctuids*).

Loew classified flowers and the wild insects adapted to them into: 1. Allotropous. 2. Hemitropous. 3. Eutropous. The *allotropous* flowers are adapted to various kinds of insects with a short proboscis. The hemitropous flowers are visited by insects with medium proboscis. The Eutropous flowers are exclusively adapted to insects possessing a long proboscis. These flowers are therefore exclusive. These flowers are pollinated by the bumblebees, honeybees, and the Lepidoptera, *e. g.*, butterflies and moths.

Plants are either (1) self-pollinated (Autogamous,) *e. g.*, the closed flowers of violet or (2) cross-pollinated with the same species (Allogamous). Cross-pollinated, *e. g.*, with the same species; red clover (3) *hybridization* occurs between different species, offspring from the wild crab and cultivated apple. In most cases the flowers are open at the time of maturity (*Clasmogamy*) (2) The flowers are closed at the time of maturity of the stamens and pistils (*Cleistogamy*), late autumn flowers of the violet.

Close pollination is prevented by the difference in time of the maturing of the stamens and pistils. When the stamens mature first, the term proterandrous is used—goldenrod, dandelion, geranium, etc. When the pistil matures first it is called proterogynous as in *Luzula*. In some plants as in European primrose and the little bluet, two sets of flowers are produced on the same plant, one with a short style and long stamens and another with a long style and short stamens. These flowers are known as dimorphic.

In the trimorphic flowers, three sets of plants are produced—one with a short style; stamens of medium length and long stamens a second plant with short stamens and long stamens and the style of medium length and a third plant with a long style, short stamens and stamens of medium length—loosestrife is an illustration. Seed will not be produced unless the pollen comes from stamens corresponding to the length of the style.

It would take a great deal of time to describe the special adaptations in flowers. A few special cases will serve our purpose, one of the most remarkable plants is Yucca, which is a native of western Iowa along the Missouri river. This plant is pollinated by the yucca moth (*Pronuba yuccasella*). The female moth has a specially constructed maxillary palp which can be rolled up so the yucca moth can gather the pollen and carry it to the flower. The female deposits its eggs in the pistil and then pushes the pollen into the funnel-shaped stigma. After a few days the eggs hatch and feed on the developing seed, each larva consuming about 20. Then the larva bores its way out of the pistil and pupates in the ground; the next season when the yucca is in bloom the moths are fully developed. The remarkable thing about the yucca is that seeds will not be produced without the yucca moth and the perpetuation of the moth is dependent on the yucca.

We have another class of flowers known as pitfall flowers, represented by the birthwort (*Aristalochia*). The flowers are proterogynous; that is the pistils mature before the stamens. The flowers, as Muller says, appear to bloom but actually do not, neither the anthers nor the pistils are mature. The insects enter the flower, the hairs point down obliquely, the insect finds it easy to enter. The fly may be in the flower for six days. In the meantime the stigmas mature and the fly leaves some of the pollen on the stigma from another flower; the anthers mature later; when these have shed their pollen the hairs relax and the insect goes out and to another flower. A somewhat similar trap occurs in some of the aroids. The insects, especially bees, are trapped by the pollen or pollen masses of the common milkeed (*Asclepias syriaca*), often so abundant on honeybees that they cannot extricate themselves. The strong and pleasant odors as well as the large amount of nectar in the nectaries attracts many insects to the flowers. The common stapelia of the same family, sometimes cultivated in greenhouses, attracts flies because of the carrion-like odor. The hair and color of the flowers resemble the flesh of some wild animals where the plants grow, and for this reason blow flies deposit their living young in the flowers.

The moccasin flower also traps insects. The so-called slippers or labellum are provided with a revolute margin. The odor which is pleasant attracts the insect who finds it an easy matter to go into the flower by the opening. It feeds on the juicy hairs, but it cannot get out because the margin is revolute. The only way for it to get out is by means of the small openings on each side at the base of the flower. In doing so it comes in contact with the stigma where it leaves some of the pollen from another flower and carries away some of the sticky pollen to another flower.

Quite a number of flowers are sensitive like the thistle, barberry, bachellor's button, laurel, etc. In the case of the barberry, which is much frequented by honeybees, when mature and the honeybee touches the anther, the stamen moves towards the insect in the flower. The Iowa thistle and other species are also sensitive. When the insects try to get the nectar in the flower, the stamens move and force the pollen out. Try the experiment sometime when you have some of the thistle heads at hand by touching them with a pencil, and you will find that a gentle wave will pass over the heads. You can see the sensitiveness in the stamen of the moss rose, simply touching them will cause the stamens to move forward.

Ames, Iowa.

Edouard Bertrand

BIOGRAPHY

When announcing, in our March number, the death of the old veteran beekeeper, Edouard Bertrand, we promised our readers a biography of this noted man. We thought best to delay this so it might appear simultaneously with the centenary of Charles Dadant, those two men having been very closely connected on the apiarian stage, although never having met each other.

The biography of Bertrand given by Thomas Wm. Cowan, in the British Bee Journal for Feb. 8, is so well written that we quote from it:

"Ed. Bertrand was born on May 16, 1832, in Geneva, where he was educated, and like many other Swiss he left his native home to make a living at the age of 20, coming to England, where he entered the banking house of Messrs. Hambro, in London. After three years he accepted a position with a stockbroker in Paris, and remained in business until 1873, after having gone through the anxiety of the siege of Paris by the Prussians. This, and the subsequent insurrection of the Commune in 1871, during a portion of which time he had the responsibility of guarding large funds committed to his care, told seriously upon his health, from which he never entirely recovered, and, not having any children, he decided to retire from business and return to his native land. Here he purchased a property at Nyon, on the shores of Lake Leman, in view of Mont Blanc, where he could devote himself to his favorite pursuits of horticulture and arboriculture.

"It was not long before he became possessed of two skeps of bees with straw caps, such as are used by the villagers, which a friend of his had offered to him, and with these he commenced beekeeping. Having no other idea about bees than those gathered from the work of his compatriot, F. Huber, in his "Nouvelles Observations," he found the knowledge acquired not sufficient for practical beekeeping. The first two or three years of his novitiate were passed in trials and failures without ever harvesting a single pound of honey. He tried, one after the other, hives with supers such as the Varembey, Ribeaucourt, Carey, Christ, etc.; then hives with small frames like the Berlepsch, Bauverd Jarrie, etc., always with the same unsatisfactory results. The honey flow in the neighborhood of Nyon is of short duration, and the district is not favorable for beekeeping, as there was only half the pasture there would be away from the lake. It was, therefore, important more than in other places to have strong colonies at the right time, an impossibility with the small hives he was using. Coming across the works of G. de Layens, "Elevage des Abeilles," and of Dadant "Petit Cours d'Apiculture," the methods there described were a revelation to him, and in 1877, for the first time, he obtained a good harvest of honey from a Layens hive which he had placed in an apiary he had started in the mountains at Gryon on a small family estate. The following year he changed his hives, partly for the Layens and partly for Dadant's, and established a third apiary at Bex.

MRS. EDOUARD BERTRAND

"In 1880 he started another apiary at Allevays in the Jura. Here he put up an equal number of Layens and Dadant hives for comparison. He was teaching apiculture gratuitously, and had a pupil as assistant at this apiary, which he later gave into his charge. This apiary always gave good results in spite of foulbrood, which decimated it, but which, however, was stamped out. Not only its first cost of 2500 francs (for hives, building for lodging, workshop and fences) was quickly returned by the produce, but every year a handsome profit was derived and divided equally between M. Bertrand and his assistant. Later he gave up this apiary to his assistant and also discarded the Layens hive in his home apiary, retaining the Dadant as the most suitable for profitable beekeeping.

"In 1876, when the Société Romande d'Apiculture was started, Mr. Bertrand was elected secretary, a post which he occupied for several years. On several occasions he was elected president of the society, a post which could only be held by the same person for two years consecutively. He was also treasurer and librarian of the society for many years.

"In 1879, the society having recognized the advisability of having an organ which would place its members in communication with each other and inform them of the advances made in beekeeping, M. Bertrand offered to edit the journal on condition that he was the sole manager, and undertook to bear all the costs. Members were supplied with the journal at the reduced rate of three francs, while the ordinary subscription was four francs. At this time the leading French journal was strenuously opposed to the new methods, and M. Bertrand had to submit to much unfavorable criticism and abuse from an Italian journal conducted by Giotto Ulivi and several of his partisans in France. However, so well was M. Bertrand's journal received that it was evident it filled a void, and at the end of two years the *Bulletin d'Apiculture pour la Suisse Romande* had sufficient subscribers to pay its cost of production, and these so rapidly increased abroad, especially in France, that it was considered advisable to change its title to *Revue Internationale d'Apiculture*. This he carried on with the help of Madame Bertrand—who was as great an enthusiast as he was—and M. Crepieux-Jamin until 1903, when owing to failing health the journal was given up.

There was no doubt that this high-class journal was the most practical and best in the French language, as it was the only one at that time which treated seriously of modern methods, and it was no wonder that it was eagerly sought after by advanced beekeepers. It was known that M. Bertrand was not only a practical but a successful beekeeper, and his advice could always be relied upon. Having successfully fought foulbrood, he was able to give such advice as has been the means of curing many diseased colonies. Being acquainted with several languages, M. Bertrand kept his readers informed of the progress being made in England, America, Italy and other countries. It was with this object in view that the "British Beekeepers' Guide Book," "The Honey Bee," and "Wax Craft," by T. W. Cowan, were translated by him into French, as was also "Foulbrood of Bees," by F. C. Harrison.

M. Bertrand also published several practical works, such as "Routine et Méthodes Modernes, premières notions d'Apiculture," in 1882; "Description des meilleures Ruches," "Conseils et Notions à l'usage des Commençants," and in 1883 "Calendrier de l'Apiculteur." The three last were later combined in one volume, entitled "Conduite du Rucher," which, after several revisions, attained its 11th edition in 1915. This is still considered the standard book in Switzerland and other countries, having been translated into seven languages.

THE BERTRAND CHALET

In 1891 and 1897 he published "Lettres inédites de Francois Huber," in 1891 "La Ruche Dadant modifiée," and in 1899 "La loque et son traitement." He also translated from the Italian Rauschenfels' La fausse-teigne" in 1890. In 1891 the translation of Dadant's "Langstroth" was published under his supervision.

During the 25 years in which M. Bertrand published the *Revue Internationale d'Apiculture* he practically revolutionized beekeeping in Switzerland and France. Old-fashioned skeps almost entirely disappeared, and rational methods were adopted. His activities did not rest there, for he gave courses of instruction from 1884 to 1887 at his own residence, where the theory and practice of rational beekeeping were imparted, and he formed a band of disciples who spread the new methods throughout the country. We can ourselves, with a pretty good acquaintance with the country, testify to the change that has taken place and the progress that has been made in beekeeping during M. Bertrand's activity. Eminent scientists and practical beekeepers of the first rank met at the hospitable residence in Nyon, and were welcomed by Madame Bertrand, who was such a help-

THE LATE EDOUARD BERTRAND

mate to her husband, and always did her best to make their visits pleasant. It is, therefore, not surprising that on M. Bertrand attaining on May 16, 1912, his 80th birthday, the day was celebrated in a manner befitting the occasion.

M. Bertrand was an honorary member of numerous societies in Europe and America. He was frequently asked to judge at exhibitions, and at the Swiss National Exhibition held in Zurich in 1883 and other places, when we had the privilege of being members of the same juries, it was with particular satisfaction that we noticed the careful attention he gave to details and the justice with which he made his awards. The acquaintance which we made with M. Bertrand 33 years ago had grown into an intimate friendship, which had lasted to the day of his death. Together, frequently accompanied by Madame Bertrand, we have made many a mountain excursion, and many apiaries have we visited, and have always found him a charming companion, fond of nature, and taking an interest in the rich flora of the mountains.

Our correspondence was frequent and regular, and just recently we received a letter from him, dated Dec. 20, when he wrote in good spirits, and it was a severe shock and grief to hear of his having passed away so soon afterwards. He was taken ill towards the end of the year, and succumbed to affection of the heart and old age, passing away peacefully in his sleep on Jan. 16. Thus we mourn a good and eminent beekeeper, and we are sure that beekeepers in this country will join with those on the Continent in their sympathy with Madame Bertrand in her bereavement. A devoted wife, she encouraged her husband in his work, and shared his labors on the Journal and in publishing his books.

"Wax Craft" was translated into French by Madame Bertrand, a work of considerable difficulty owing to its technicality, but it was satisfactorily accomplished. She also translated articles from English, American and Italian papers, and in other ways shared his literary activities. It will be some consolation for her to know of the great respect entertained for her husband, that the seed he had sown had germinated well and borne good fruit, and to feel that he was the means of doing a great and valuable work, not only for his country, but also for European beekeeping, and that his name will be handed down to posterity as one of the eminent bee-men of the 19th century.

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THE BERTRAND SUMMER HOME

The War Conference

BY AN ONLOOKER.

In future years, the recorder of beekeeping history may mark April 23, 1917, as the beginning of a new epoch for the industry. On that day a little band of earnest men gathered in Washington in prompt and patriotic response to a call sent out by the Bureau of Entomology. Three days before, telegrams had flown over the country summoning these men to a war conference, and to those farther West, it meant an immediate dropping of work, at considerable sacrifice, in order to be present on that memorable Monday morning.

The conference was held in the big, white suburban house, known in the neighborhood as the "bee office," whose only sign of officialdom is the modest Department of Agriculture tablet on the front, and the American flag flying from an upstairs window. The shade trees half hiding the wide porch, the sweeping grass dotted with white hives, the quiet house itself, all seem symbolic of peace and happy family life, but upon opening the front door, one enters immediately a different atmosphere. The wide hall is lined with filing cases, and one corner that day was piled high with envelopes already addressed to the beekeepers of the country. During the day, two colored porters shuffled in and out, carrying reams upon reams of paper. In the big office overlooking the apiary, sat the war conference, presided over by the President of the National Beekeepers' Association, most of the discussion being led by Dr. E. F. Phillips, whose prescient mind had been preparing for weeks for the emergency now upon us. Every one of the faces was grave and earnest; the twelve men there had come with one idea—service. At one table sat Prof. Jager from Minnesota, his face lit with enthusiasm as he talked of the possibilities of bee-culture to Mr. Cale, Maryland's representative to the conference. Near him sat Dr. Gates of Massachusetts, whose intellectual attitude of mind was offset by the practical business acumen of Mr. Bacon from Wisconsin. Here was Mr. E. R. Root, eager to enlist the great machinery of the Root Company's plant into the country's service, here sat Dr. Jones, of the Bureau of Crop Estimates, anxious to help; beside him, Dr. Nelson and Mr. Sturtevant, both scientific investigators of the Bureau of Entomology, ready to put microscopes aside and do their bit. Mr. Demuth and Mr. Sechrist, also of the Bureau of Entomology, were prepared to add their valuable practical knowledge to the wide scope of the discussion.

From early morning the conference wrestled with the problem, not only of making the slogan "A hundred million pounds of honey extra" come, true, but also of getting supplies and honey containers to the men who will produce that honey, and of marketing the hundred million pounds after it is produced. There was a sudden cessation in the work when a swarm issued from one of the winter cases just outside the windows! Even war must wait—nothing is more compelling than a swarm! Instantly these dignified men became simply enthusiastic beekeepers who must see where the swarm would light. Their only interest in the world now seemed to be the tiny whirling specks against the sky, and the only conversation was on methods of wintering which could produce colonies strong enough to swarm so early. Mr. Demuth with swarm-box and veil gave a demonstration of his ability to climb a ladder, amid encouragement and jeers from the rest, and the swarm was safely hived. There was only one calamity—Mr. Cale was stung on the tip of the nose! The excitement over, the war conference went back to work indoors, out of the warm sunshine, like school-boys after a recess.

In the meantime, anxious wives in the kitchen—now Mr. Sturtevant's laboratory—wished they would "hurry and get through talking before the coffee would get cold." At last Mr. Sturtevant came out, ostensibly to say that the conference had adjourned for lunch, but in reality to see that the five women in his precious laboratory were not using his utensils or breaking his test-tubes.

After lunch, the men fell upon the war program once more with renewed vigor, but the afternoon discussion was broken by a visit from Dr. L. O. Howard, Chief of the Bureau of Entomology, who came from the city to welcome the visitors, and by a short talk by Mr. J. W. Fisher of the Office of Markets, who outlined the proposed work of that office in marketing honey. Mr. W. D. Bentley of the Office of Extension Work in the South, also came to tell how his office would assist beekeeping, and to urge that the regular extension work be utilized in spreading the news to beekeepers more rapidly.

By dinner time, without having begun to exhaust the topic, the conference had a program well mapped out for the mobilization of the beekeeping industry, and recommendations were drawn up in a formal letter to the beekeepers of the United States. Tired but satisfied with the day's work, the men piled three deep into the two automobiles at the door, and were taken to Dr. Phillips' home for dinner.

Did you ever see and hear ten or twelve bee-men together at a meal? They ate honey of course, beautiful little individual packages of it, the gift of the producer, and they weightily considered its flavor with as much gravity as they had used on the war program. Snatches of their conversation overheard ranged from liberty and independence to garden crops and soda water! Here Mr. Demuth was describing the "true democracy" found in the beehive, "where noone is boss—absolutely noone"—and wistfully he wished that men might learn wisdom from the bee. At one end of the table Prof. Jager was talking of Arlington Cemetery with its rows of unknown dead.

"Ah! Liberty, Liberty!" he said sadly, "What a price to pay! And yet—we are willing to pay anything—anything for it! We must help the little countries to their freedom!" He spoke feelingly for, a Southern Slav himself, he knows well the iron heel of oppression.

At another table, Mr. Bacon was discussing the psychology of faces, and the necessity for salesmen to be able to read faces.

"Talking to some men, who look you coldly in the eye without a change of expression, is like addressing a stone wall——"

"Yes, I eat a half pound of honey every day," says Dr. Jones from another quarter, "and everybody would be the better for doing likewise."

"I have a few new pieces of pottery—fine specimens—that I picked up in——" and Dr. Gates is off on his hobby; while Mr. Root dilates upon the charm of life in winter in Florida.

Dr. A. C. Baxter, of Illinois

So the war conference relaxed and enjoyed itself until 7:00 o'clock, when the relentless and indomitable Dr. Phillips led them back to the office to work until late that night.

The next day saw them scattered in committees of two or three, determined to achieve concrete results. One group spent the day at the office of the Secretary of Agriculture, asking for increased funds for the Bureau of Entomology for the war propaganda. Another waited upon the National Defence Council with regard to the transportation of containers, while still another went to the Post-office to see about the shipping of bees by mail. That night the groups dissolved, and most of the men left Washington.

It may seem like a little thing—this gathering of a dozen men, but it was of no small moment to the beekeepers of the country. Those few but determined minds have put into motion an impulse that will go on with increasing power long after the war is over, so that apiculture may rapidly take her rightful place among the agricultural industries of the United States. The time may not be far distant when honey will be on every table, and more beekeepers will count their hives by thousands!

Honey—Compared With Other Sweets

BY A. C. BAXTER, M. D.

It is a fault of man to praise highly anything in which he is interested, the beekeeper being no exception to the rule. He is fond of praising his honey as a food and a "cure all" for the diseases to which the human body is heir. He does not praise the honey with the idea to mislead or deceive, but from lack of knowledge of what honey really is. When he tells of the medical value of honey he bases his opinion on what he really thinks has taken place, as he has used it in various ailments, and being still able to tell the tale, he believes honey the agent that restored his health. When the facts of the matter are carefully looked into it is discovered that probably he would have been well in a few days without any treatment.

Another common fault is to explain to the housewife the food value of honey and compare its value with some common article of diet. For example: that seven ounces of honey is equal to a quart of milk. True it is, but the good housewife doesn't believe it, and at any rate you couldn't expect her to replace milk with honey. On the other hand if she learns that strawberries or peaches have a better flavor with honey or that bread and cakes made with honey keep better, not drying out as when made with sugar, she is at once interested and will get some honey to see whether the story is true.

It is as an article of diet that honey must be known, if it is ever expected to become more than a luxury or a sweet to please the children, an article that surpasses all other sugars in the diet of mankind. To understand this it might be well to explain what honey is and the digestion of the various sugars. The chemist tells us that honey contains approximately 40 percent levulose, 33 percent dextrose, and 1½ percent saccharose, the rest being moisture, a small amount of mineral, coloring matter and dextrine (vegetable gum). This percentage of sugar varies with the nature of the nectar and age of the honey. In old and well ripened honey saccharose (cane sugar) is converted by a ferment present in all honeys into levulose and dextrose.

Honey, therefore, consists of two principal sugars, levulose (fructose) and dextrose (grape sugar). These sugars derive their names from their action on a ray of polarized light, their chemical formula being the same. Levulose in solution turns the ray of light to the left, it being levorotatory or as its name indicates, is a "left handed" sugar. Dextrose, on the other hand, turns the ray of light to the right, being dextrorotatory, and is therefore a "right handed" sugar. The predominating sugar in honey is levulose, it being the sugar that gives honey its high food value. All sugars are digested and assimilated in the small intestine. Saccharose (cane sugar) is split by an intestinal ferment, in equal parts of levulose and dextrose, and is then absorbed, while honey already containing these sugars does not have to be acted upon by a ferment, and can be assimilated by any one, even if the ferments are absent. Levulose is very readily absorbed in the intestinal tract, while dextrose without the presence of levulose is very slowly absorbed. In some manner the "left handed" sugar in its passage through the intestinal walls, pulls along the "right handed" sugar.

The glucose of commerce, known in America as corn syrup, must be regarded as a mixture of dextrose, maltose and dextrine, and is prepared by hydrolysing starch, by boiling with a dilute mineral acid. After the acid is removed and the solution clarified, the liquid is concentrated in vacuum pans to the density of syrup. A small quantity of solution of sodium bisulphite is added to bleach it to prevent fermentation and to inhibit browning. The maltose of this mixture must be acted upon by a ferment before it can be used by the body, and then it forms more dextrose. So it is easy to see that an individual who uses this syrup is receiving very little food value for his money. The only thing accomplished is the softening of a little dry bread. So with all of man's methods, Nature's sugar—*honey*—still continues to be the best sweet for man.

Springfield, Ill.

The Work of the Bee Division of the Dominion Experimental Farms

BY F. W. L. SLADEN, APIARIST, DOMINION EXPERIMENTAL FARMS

In organizing the work of the Bee Division of the Dominion Experimental Farms, my endeavor has been to develop work of practical utility to beekeepers on the lines that have been laid down and successfully followed by the other divisions of the Experimental Farms' service. The Experimental Farms' system conducts researches and experiments to test the value, for all purposes, of all kinds of stock and plants and their adaptability to the varied climatic and other conditions which prevail in the several provinces. The investigations of the parlimentary committee upon whose recommendation the Experimental Farms were established appeared to demonstrate that defective and wasteful farming was the cause of the agricultural depression prevalent at that time, and that there was need of the discovery and application of more scientific methods.

For conducting the necessary experiments, there are, in addition to the Central Experimental Farm at Ottawa, some 20 branch farms and stations scattered throughout the Dominion. At five of these bees were kept when I was appointed four years ago, and one of my first cares was to see that these apiaries were as well managed as possible, and to find out what practical information of value to local beekeepers could be obtained from them. The task had certain difficulties. The apiaries were not large enough to employ a man's whole time, and often we have had to train others. At the present time bees are being kept on 15 of the Dominion Experimental Farms including Ottawa, and reports made out three times a year of the progress of the apiaries are filed. In the summer report we have, amongst other things, the daily gain and loss of a hive on scales with the meteorological conditions and honey plants in flower at the time. This year a weekly report during the summer has been started with its principal object the control of swarming.

The work has demonstrated that it takes at least two years for the average man to become even a fair beekeeper. It has also shown that successful beekeeping, that is, beekeeping resulting in large and profitable yields of honey, depends on three main conditions: (1) The presence in abundance of nectar-secreting flowers, (2) favorable weather for the development of the plants and the secretion and ingathering of the nectar and (3) good management of the bees. The first two—honey plants and weather—are the local conditions, and it depends upon them, in a word upon *locality*, whether a good beekeeper will get a yearly average of, say, 50 pounds of extracted honey or 100 pounds. This is a very important consideration to the professional beekeeper.

It would, of course, be impossible to investigate in detail the whole subject of productive beekeeping thus outlined; it would also be unnecessary. Many bee problems common to all countries are being ably investigated by trained men in the United States and elsewhere, and I have felt it my duty to study first those that are essentially Canadian. Occupying as our country does almost the whole of the northern part of North America, many conditions are found in the Dominion that are not dealt with in any textbook on beekeeping. Chief among these conditions are the honey plants found in different parts of Canada and their value particularly in relation to the weather, and two problems in bee management, wintering and the control of swarming.

I selected these two problems in management because they are the cause of much trouble and loss in Canada, and are the most difficult to deal with. Sixty percent loss of bees (not colonies) in winter is not rare, and of swarming it may be said that this factor more than any other limits the number of colonies a man can keep. Besides, both problems are especially acute and present special phases in Canada. Our winters are cold and long, and the rapid change from severe winter to our long and glorious summer days brings with it an excessive tendency to swarm unknown in the tropics where every day is much alike.

Not much can be said about our experiments in wintering and swarm control because they have only been recently begun. In regard to wintering, the losses in apiaries around Ottawa during the past two years have been quite heavy, and the cause ascertained to be unwholesome and granulated stores, aggravated in many cellars by excessive dryness, in many cases causing a heavy consumption of stores, 20 to 25 pounds per colony, and rapid mortality. This investigation has drawn attention to the fact that our winters are very dry, and that in a dry cellar the stores will gradually dry up and the bees may suffer severely for want of water. It has also shown that where stores are likely to prove unwholesome, allowance must be made for a heavy consumption amounting possibly to more than double the usual consumption of wholesome stores. In order to discover the source or sources of the unwholesome honey, colonies are being wintered on stores gathered at three different seasons; first period, June 26th to July 18th, the stores in this case consisting of clover honey; second period, July 24th to Aug. 8th, stores consisting largely of sweet clover honey; third period, Aug. 14th to Sept. 11th, honey from goldenrod, aster, buckwheat, sweet clover and other sources.

To study the effect of varying degrees of humidity on bees wintered on these different stores, some of the colonies will be wintered in a dry cellar and others in a moist one in our new apicultural building, which was occupied on Feb. 11th last. Following a method adopted with success at the end of last winter, each colony is being supplied with an empty shallow chamber between the brood-chamber and floor, and paper trays are to be slipped in over the floor and removed at fixed intervals to estimate the rate of mortality of the bees. By making daily observations on the rate of mortality last winter in this way, it was definitely ascertained that the supplying of water to the bees in the cellar reduced the mortality.

Some colonies have been wintered outside during the last four winters. A smaller proportion of these have died in winter, and the living colonies have come out stronger and, protected by the packing, have built up faster in spring than the colonies wintered in the cellar.

The problem of the control of swarming can be attacked in two ways, by endeavoring to breed a non-swarming bee and by manipulation. The former looks attractive, but needs close attention, requiring more than I feel justified in spending on it at present. Preliminary experiments in the latter, manipulation method, were undertaken in the apiary at Ottawa this year with the result that the expanding of the brood-nest so as to reduce the congestion of young bees and give the queen more room to lay was not found to be so efficacious in preventing the building of queen-cells in preparation for swarming as was hoped, although it had a certain effect. Cutting out queen-cells every week is apparently necessary under the conditions we encountered this year at Ottawa. Even this measure, however, had its efficiency much reduced by two things, the frequent building of queen-cells from worker larvæ and the frequent issue of the swarm before the queen-cells were capped over. A strong desire to swarm had developed in the majority of the colonies in the apiary, and this desire spread to nearly all the other colonies and continued while favorable conditions lasted, rendering the usual methods of preventing swarming of little use. These were conditions in which the treatment of making artificial swarms or hiving natural swarms on the parent stands was indicated.

But the principal subject upon which I wish to speak today is *locality*, in particular the quantity and quality of the crops of honey obtainable in different parts of Canada and the principal factors that control the yield, honey plants and weather.

Ottawa, Ont.

[To be continued.]

Some Bee History

BY H. B. PARKS, BIOLOGIST.

DURING the period in which the United States was recovering from that struggle that gave to her independence, a few adventurous Russians under the leadership of Count Baranoff, took possession of Alaska and founded colonies to the far Northwest. The Russians in America became the source of wealth for the home land, the exploit ground for the adventurer, and a safe harbor for the exile. With the colonies came the priests and monks of the Greek church. As these came from the barren steppes of Siberia, where every available source of food must be utilized, they were well fitted to become the pioneer teachers of Alaska.

These pious fathers brought with them from the fields of Kazan a double-walled straw skep and its hord of toilers. Here along the Gulf of Alaska in the heart of Seward's Ice Berg, the honeybee started to work in 1809, and today in Sitka and other old Russian towns in Alaska are the sturdy descendants of this hive.

The flower season of southeastern Alaska is of good length, and because of the abundant rainfall the flowers are mostly insect pollinated, so that the bee has the nectar supply. But it rains, it rains and then pours, and the brave little worker dodges the drops and gets his store of sweets. The flowers are mostly pendulous and the nectar secretion great. The native bees are covered with a rough hairy coat and pay little attention to the rain. It is a peculiar sight to the beekeeper from the States, where the bees are inactive during showers, to see these Alaskans under the cover of the leaves gathering their loads and then during a lull in the storm go to the hive. Because of the damp and rainfall most of the hives are located on shelves under broad eaves or in open garrets.

Early the priests imported a clover resembling white clover for a bee pasture. So important did the Russians consider the bees that when Count Etholin, in 1819, reported on the condition of the colony to St. Petersburg, he mentioned that in the course, a study of the colonial school apiculture was given a prominent place.

The Russians in seeking an outlet for their produce, skirted the west coast of America as far south as California, where they traded fur, bells, iron work and oil for wheat. It is a notable fact that notwithstanding the stories of the keepers of the old Spanish Missions as to the origin of their wonderful chimes, the most of the bells bear the double headed eagle of the Russian-American Fur Company, and were cast at Sitka.

In order to carry on this trade, Fort Ross was established in 1811 by the Russians about 200 miles north of San Francisco. Here bees were brought from Sitka, so that in California today may be found the descendants of bees from Russia, Mexico, and Spain, together with the modern importations.

It is a fact of interest that the Russians sold their domain in California in 1841 to Thomas A. Sutter. He gave a promissory note for $30,000 for the land claimed, the town, the fort, the right to rule and acknowledgement of his government, for he intended to rule as a dictator. Sutter today is known only as the discoverer of gold, and the Russian-American Fur Company still holds the unpaid note.

Albany, Mo.

Guide Marks for Returning Bees

BY FRANK F. ROJINA.

IN the article on "House Apiaries" in the March number, Mr. Pellett does not mention the most serious defect on all bee houses mentioned therein, the lack of proper identification marks to prevent mixing the bees and loss of queens.

In Carniola, bees have been kept in our family (Roj-ina in the Slavic language means "Swarm-man") in house apiaries for several hundred years, and we have gone through all these experiences.

We solve this difficulty by carving pictures in green, red, blue, yellow, etc. Some of these fronts are quite artistic, representing scriptural and national folklore legends. I often watched returning bees, at times marking them on the thorax with paint and found that they always landed on their return home on the *identical* spot which impressed itself on them on their first bee-play flight. This mark was the hand, or the head of some carved figure or a spot of paint, sometimes several inches away from the entrance.

On coming home the bee always landed on this spot, whence it quickly marched down to the entrance. In American bee houses we fail to provide such guiding marks for returning bees, hence our losses.

In Carniola we are never bothered with the mixing of bees or loss of queens.

University Farm, St. Paul, Minn.

[If our readers will turn to the front page of the cover of this number, they will notice that the hives in the Kanar-off apiary are painted in the manner described by our youthful correspondent, Mr. Rojina. So this method of marking the hive front with distinguishing designs is followed in Caucasus as well as in Carniola, and probably in many places where bee owners are supposed to know very little about the requirements of beekeeping. There is some doubt in our mind as to whether these marks are sufficient to prevent entirely the mixing of bees in hives so closely located. But it must certainly help.

We offer these suggestions to owners of house-apiaries.]

No. 5.—Seventy Years of Beekeeping

THE later improvements and discoveries in beekeeping have been less marked than those mentioned previously. Many things which we think we discover are but repetitions of former deeds. It is true that, within the past few years, foulbrood has been better described and better treated. Cheshire and Cheyne, both English, first discovered a bacillus which they named "bacillus alvei" (1885). But our own Dr. White, of Washington, D. C., determined a more precise discovery in "bacillus larvae (1903), with which he could reproduce what is now called "American foulbrood." Later he has described another form which he called "bacillus pluton," which he believes to be the cause of "European foulbrood." But if we look back nearly 50 years, we find, in the third volume of the American Bee Journal, February, 1868, a translation from the Bienenzeitung, in which Dzierzon describes the symptoms of these diseases very accurately, though he had no knowledge of the bacilli. His methods of cure are also very similar to those in present use. But even Dzierzon was not the first to use "fasting" to free the bees of the germs of the so-called American foulbrood. In 1761, Schirach used the starvation method. We have already mentioned this in our May issue.

We may, however, take pride in the regulations which are becoming annually more universal, brought about by inspection laws and quarantine. Within a few years, brood diseases will be well under control, not only in the United States but throughout the civilized world. In this country and Canada, four men may be credited with the early work in this line. They are D. A. Jones and Wm. McEvoy, already mentioned, both Canadians; N. E. France, of Wisconsin, whose father, Edwin France, was a noted beekeeper as early as 1879, and E. W. Alexander, of New York State. A few months ago Dr. White again distinguished himself by a description of a minor disease of similar nature under the name of "sacbrood."

Diseases of the adult bee, May disease, paralysis, Isle-of-Wight disease, still belong to the unknown, as far as cure and exact knowledge of causes are concerned.

However, at a comparatively modern date, 1909, Dr. Zander, of Bavaria, discovered a parasite of the stomach of the bee, which is suspected of being the cause of some of these diseases. It is also called "microsporidiosis." As early as 1857 and 1858, spores which were probably the germs of Nosema were observed by Donhoff, Leuckart and Higgins (See Graham-Smith's report on Isle-of-Wight disease). The exact diagnosis and cure of the adult bee diseases belong to "tomorrow."

There remains for us only to review briefly the literature of the modern bee world. This must necessarily cover only the United States, for if we were to try and give a list of the modern foreign and Canadian works and journals on apiarian science of the past 40 years, the enumeration would become tedious. We will make an exception only by mentioning the most important:

Cowan, Cheshire, Bertrand, DeLayens, all but the last published since 1883. Cowan and Bertrand have had the honor of seven or eight translations each, in different languages.

In our own country, the revision of the "Hive and Honey Bee" was entrusted by Mr. Langstroth to Charles Dadant and the writer, Mr. Langstroth's health being too poor for a revision of this "classic." The work of revision, begun in 1885, was completed only in 1888. Translations were made into French, Russian and Spanish. Meanwhile, the work of A. I. Root, the A B C of Bee Culture, has been enlarged and entitled "The A B C and X Y Z." It is the largest book and has had more editions than any other book on bees ever published. It is a very complete encyclopedia and really not an A B C, which would indicate an elementary work. It has also been translated into French, Spanish and German.

In 1886 Dr. C. C. Miller published "A Year Among the Bees,", later republished (1902) with additions as "Forty Years Among the Bees," and recently (1911) as "Fifty Years Among the Bees." Its experience is indicated by its title. Few men have had as thorough practice as Dr. Miller.

Quinby's "New Bee Keeping," Alley's "Handy Book," Cook's "Manual" have already been mentioned, as well as Hutchinson's "Advanced Bee Culture," and Doolittle's "Scientific Queen-Rearing."

We could not here mention all the pamphlets, State Reports and Bulletins of the Department of Agriculture, treating of bees, published since 1883, one of the early ones of which was Benton's "The Honey-Bee," 1899. We cannot fail to name, however, some of the different studies by E. F. Phillips, in charge of bee culture at the Bureau of Entomology at Washington, "The Treatment of Bee Diseases," "The Temperature of the Honey Cluster in Winter," by himself and Geo. Demuth; "Bees," "Outdoor Wintering," also some of the works of his associates, "White's Bacteria of the Apiary," "Snograss' Anatomy of the Honey Bee," "Nelson's Embryology," "McIndoo's Olfactory Organs"; also Phillips' independent book, "Beekeeping."

Will the list be too long if we add several splendid modern works? "How to Keep Bees," by Anna Botsford Comstock; "The Honey Makers," a delightful book of traditions on bees by Margaret W. Morley; Alexander's Writings in pamphlet form; Townsend's "Bee Book," and recently "Productive Beekeeping," by F. C. Pellett.

Several works have also come to us from Europe, besides Cheshire and Cowan; four of the leading ones being: Maeterlink's "Life of the Bee," "Simmin's "Modern Bee Farm," Digges' "Practical Guide," and Edwards' Lore of the Honey Bee."

But the best evidence of the impetus given to beekeeping by the discoveries and improvements mentioned in the four previous installments of this review, is shown in the number of periodical publications which came to life in the United States since 1877. Naturally bee-culture is too small a branch of farming to sustain many periodicals; so these magazines had but a short life. The only ones which have endured to the present day are the following:

The American Bee Journal, established in 1861, had as its first editor Samuel Wagner, its founder, to 1872; Geo. S. Wagner, his son, to 1873; W. F. Clarke to August, 1874; then the National Bee Journal was merged into it, with Thomas G. Newman and Mrs. Ellen S. Tupper as editors, until March, 1876, when Mrs. Tupper was dropped and Newman continued alone. Later he took his son, Albert J. Newman, in partnership. In June, 1892, it passed into the hands of Geo. W. York, who retained it until May, 1912, when it came under its present management.

Gleanings, established in 1873 by A. I. Root, is still published by the A. I. Root Co., with his two sons, E. R. and R. H. Root, as associate editors.

The Beekeepers' Review, established in 1888, by W. Z. Hutchinson, an excellent editor, already mentioned in these articles, was published by him until his death in May, 1911. E. B. Tyrrell published it for two years, when it was handed over by him to its present editor and manager, E. D. Townsend, a man of great experience with bees. It now appears under the name of "Domestic Beekeeper."

The Booster, published at Redkey, Ind., by Geo. W. Williams, is devoted to the distribution of honey. It appears irregularly.

The Western Honey Bee, now four years old, is published by the California State Beekeepers' Association, with J. D. Bixby as editor. It is a lively little magazine.

We have also compiled a list, which is quite lengthy though incomplete, of the various periodicals on the honeybee, which have appeared in the United States from the early days to the present, and which have had a life of one single number to ten years or more. As there are 40 or more of them and the list may be interesting to peruse, we will publish it in our next issue, with the portraits and names of the few veterans who have been readers and contributors of the American Bee Journal for more than 30 years. It will end this review of "Seventy Years of Beekeeping."

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Bee Proof Armor for Women

There is nothing that will help more to give a woman the confidence and composure necessary to handle bees than the knowledge that she is clad in such a way as to reduce to a minimum the danger of stings.

A man can put on a veil and a pair of sleeves, tuck the bottom of his overalls into his stockings, and know the bees can touch no part of him but his hands. Unfortunately a woman's ordinary apparel is not easily converted into bee proof armor.

When I first began to work extensively with bees, I tried overalls. I found, however, that they are not very satisfactory. They are hot and heavy over other clothing, and where one's bee-yard is in view of the public highway are somewhat objectionable on that account. They are especially undesirable where there is outyard work requiring journeys of several miles or more, in that an almost complete change of costume is necessary when arriving at and leaving the outyard. Then I tried bloomers, made knee length, and worn as a petticoat. I discovered, however, that stings on the shins and calves hurt as much as anywhere else, and that the swishing of the skirt is likely to make the bees more liable to sting just above the shoe tops.

Last summer I made a pair of bloomers that reach to the instep and fasten under the shoe like a legging. These I found entirely satisfactory. The bloomers serve as a petticoat, and are worn under a simple one-piece wash dress. They may be worn out of the bee-yard as well as in. When one leaves the yard the bottom of the bloomers can be pushed up to the knees, and thus be entirely hidden by the dress skirt.

Pattern for these bloomers can be got in any of the well known patterns under the name of tango bloomers. Light colored cotton material such as unbleached muslin or seersucker is the best goods to use, for it is easiest laundered and can be boiled when being washed.

At first I tried elastic in the hem at the bottom of the bloomers, but found that as I worked the elastic was likely to slip up to the shoe top and leave a vulnerable spot which the bees were sure to find. After experimenting, I discovered that a piece of tape about 18 inches long is the best. This is run through the casing at the bottom of the bloomer legs. When the bloomers are put on, the tape is drawn close about the foot at the ankle, having the ends uneven in length. The short end is used to tie the tape about the ankle on the inside of the foot. The long end is then slipped under the foot like a legging strap, brought up and tied to the bottom of the bloomer on the outside of the foot, thus preventing the bottom of the bloomer from slipping up on the shoe. A safety pin is handier than a hook or eyelet of any kind, as an eye into which to tie the tape after running it under the foot. Merely pin the safety pin in the hem, run the tape through the eye at the end opposite the clasp and tie the tape. The safety pin is also handy for other reasons.

When through working in the bee-yard, slip the lower edge of the bloomer up to the knee, tie the tape about the knee, and use the safety pin to pin the bloomer to the stocking. One can then walk about without having the bloomers show below the dress skirt. If the tape should slip out of the casing the safety pin makes a handy bodkin for running it back in.

With any favorite bee veil, a pair of oversleeves with elastic at elbow and wrist, and a pair of these bloomers worn under a comfortable one-piece dress, a woman can do bee work with ease and comfort, and what is more important, with peace of mind.

CECILIA H. HENDRICKS.

Powell, Wyo.

Possibly the trouble you had with your bloomers slipping above the shoe top was because you did not make them quite long enough. I have worn bloomers with an elastic band run in the hem at each ankle, and also around the top for some years, and as long as the elastic was kept snug and tight have had no trouble.

If, however, yours is inclined to slip, why not sew an elastic tape to each side of the bloomers at the ankle, so when drawn on the elastic tape would pass under your shoes, and thus do away with the bother of tapes and safety pins, said safety pins being rather hard on stockings, I should imagine.

One of the things I have enjoyed about my bloomers is the ease with which they are donned, and also the feeling of perfect security, as there are no tapes to come untied just at a critical moment.

Percale makes very nice bloomers.

Hiving the Swarm

If there are no low growing shrubs or small trees near the hives, it will save a lot of bother to have a few evergreen shrubs five or six feet high cut and set upright a few feet in front of the hives. Bees don't always do just what one wants them to do, but will almost always cluster on these nearby evergreens, where it will be easy to get them. A common tin pail of eight or ten quart capacity is a good thing to get them in. Hold the pail under the cluster and gently detach it from the tree. It will fall into the pail, and the queen being with them, as she almost always will be, the cluster may then be carried to the hive and turned down in front of it. The bees will crawl from the pail into the hive without further trouble.

If the swarm should alight on a tall tree out of reach without climbing, and one has no swarm catcher, one may be improvised that will work very well. Get any kind of a pole that will reach them and is not too heavy to handle, nor yet too light to support the weight of the bees. Tie a white cloth around the end and on this smear some honey. Push this end carefully into the swarm. They will begin at once to cluster on the cloth-bound end of the pole, and by carefully moving it and holding it a little away from the tree one will soon have the cluster on the pole and can carry it where one pleases. The women folks have to contrive methods suited to their strength. A curtain pole that held draperies between two rooms and was about 12 feet long was the handiest at one time; a stout piece of scantling at another.

A frame with comb in it with a little honey and brood will hold them in a new hive. Lacking this, smearing the inside with honey will usually keep them. A queen-trap at the entrance is a sure thing. My bees do not like a perfectly new hive and will almost always swarm out unless I use one of these methods to prevent it.

Glover, Vt. [MRS.] J. W. MATHIE.

[The suggestions given above are good. But if there should be any robbers about, as there are sometimes, if the bees swarm shortly after a heavy rain, the honey may attract them. We prefer a dry comb tied to the pole. If this comb is of the same size as the frames of the hive into which the swarm is to be put, it may be inserted into that hive at once.

Similarly, to retain the bees and prevent their deserting, the comb and brood mentioned by our correspondent will act efficiently.—EDITOR.]

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Using Last Year's Sections

Last year being a poor honey year, our supers were not filled as they should have been, a good many sections had just a little comb made on the foundation, and we thought we would put these in supers this year, but there were a great many where the comb was all built and contains a little honey. Would it do to put these in? Also, how does it work to put in the section boxes, that we took honey out of this year, where they are all clean and nice?

I have one large colony that was all right when I put them in the cellar, and lately when the temperature was at 36 degrees they commenced piling out and putting out dead bees. What do you think was the cause? AMATEUR.

The sections that had some of the foundation drawn out but no honey in them will be just as good as or a little better than if they had never been on, provided they were not left on too long last fall. If sections are left on some time after bees stop storing, the bees are likely to daub them with propolis, and sometimes they varnish the surface of the foundation so thoroughly that the bees will not work them at all afterward.

Sections that have a little honey stored in them should be cleaned out by the bees in the fall, and then they are excellent to use in the first supers the next season. Such sections are often called baits, because they bait the bees up into the supers to begin work sooner than when the super contains nothing but foundation. But if the honey be left in the sections over winter, it is pretty sure to be candied, and candied honey is objectionable in sections.

When the honey is cut out of a section box it is all right to use again if clean and nice.

It is a little difficult to say just why the bees should pile out with the cellar no warmer than 36 degrees, if by piling out you mean that they were in a cluster outside the hive, unless considerably excited in some way. But if they came out and ran about the entrance, throwing out their dead, there was nothing strange about it with the light shining in. Bees are dying off all through the winter, and if it is light enough the bees throw them out, and even in the dark they do more or less at it. Their quieting down when you darkened the cellar would indicate that the light caused the trouble.

MISCELLANEOUS NEWS ITEMS

Second-Hand Cans for Honey

Those of our readers who remember the investigation made by Mr. Pellett, in Chicago, reported on page 188 of our number for June, 1916, concerning the sale of honey, probably remember vividly that second-hand packages are very objectionable to purchasers. In the April number of the Western Honey Bee, we find an article by J. Edgar Ross, which gives great emphasis to the objections against second-hand cans for extracted honey. As Mr. Ross' experience is identical with our own, we will quote what he says on the purchase and use of second-hand 60-pound cans:

"In the spring of 1912 the eastern bottlers of a much-advertised line of honey were advertising second-hand cases and cans. I had some correspondence with them and they described the cans as entirely free from rust on the inside, cases in good condition, and in nearly all cases free from marks to indicate the producer's name. Where they were so marked they specifically agreed to have the marks scraped off with a box-scraper. They said they were not recommending them for water-white honey, but assured me that for the grade of honey produced in our valley I would find them 'entirely satisfactory.' I wired an order for a carload, 1300 cases, to be sent S. D. B. L. (Sight draft on bill of lading). They came very promptly, but to my surprise I found that the bill of lading did not permit examination.

"If I had such a situation to meet again I would wire for a permit to examine the goods, and before accepting them and paying the draft I would get an adjustment for those that failed to come up to specifications. But there were many things that I did not know when I paid the draft and the freight and hired a drayman to haul the cases to my yard, taking it for granted that they would be all right. The rush season was just beginning, and beyond noticing that a number of the cases still bore the placard of the Continental Oil Company on the end, entirely innocent of any marks of a box-scraper, I did not inspect my purchase until time to fill the cans.

"Not even then, though I found a surprisingly large percentage of the cans unfit for honey of any grade, did I realize how badly I had been stung until the season was drawing to a close and the manager of our association was having some correspondence with this same firm in regard to the sale of honey. They enquired whether the association used new or second-hand cases, and added, "*We would not care to handle your honey if you use second-hand cases.*" That, of course, was enough to open the eyes of a blind man. If honey in 'entirely satisfactory' cases was so unsatisfactory that they did not care to handle it, there was nothing left for me to do but figure up my loss and forget all but the lesson.

"The cases had cost me, laid down, 40 cents each. Of the 2600 cans, 312 were utterly useless. Some of these were so rusty on the bottom that you could push your hand through the thin shell of remaining tin. Seventy-one contained a thin liquid as black as your hat and with an odor like a sewer. My guess is that these had been rinsed out to get all the honey, and from a teacupful to a quart of the last rinse water left in each can. This had turned to vinegar and the acid had eaten the tin and part of the iron from the inside of the can. They were entirely unfit for honey, but after cleaning them up I sold them to a dealer in lubricating oil for about enough to pay for the labor of cleaning them. Ninety-four cans, though in fair condition on the inside, were so disreputable looking on the outside that I couldn't insult my honey by putting it into them, so the oil man got them also. Two hundred and thirty cans contained hard, dry chunks and cinders of what had once been honey. Some of these chunks were actually burned into the tin, and they couldn't be cleaned by any practical process.

"I may go into the nursery business some day. If I do, these will serve a useful purpose; I can start trees in them. Thirty-one of the lot had holes in them which I soldered up and made them useful. My loss was 707 cans—slightly more than 27 percent of the entire lot. The cost of inspecting, sorting and cleaning them was about 5 cents a case. Now, how badly was I stung? I never had any complaint regarding the honey in the cans I did use, but I hate to think of what would have happened to me if I had used them all."

We did not have as expensive an experience with second-hand cans as Mr. Ross reports, but we once invested $20 in 100 cases of two 60-pound cans, warranted as good as new. Of these we used about 20, with much regret afterwards, and the balance were wasted or used for entirely different purposes Don't buy second-hand cans nor No. 2 shipping cases for comb honey.

A Single Slice of Bread.—WASHINGTON, May 5.—A single slice of bread seems an unimportant thing. Yet one good-sized slice of bread—such as a child likes to cut—weighs an ounce. It contains almost three-fourths of an ounce of flour.

If every one of the country's 20,000,000 homes wastes on the average only one such slice of bread a day, the country is throwing away daily more than 14,000,000 ounces of flour—more than 875,000 pounds, or enough flour for over a million one-pound loaves a day. For a full year at this rate there would be a waste of over 319,000,000 pounds of flour—1,500,000 barrels of flour—enough to make 365,000,000 loaves.

Fourteen and nine-tenths bushels of wheat on the average are raised per acre. It would take the grain of some 470,000 acres just to provide a single slice of bread to be wasted daily in every home.

Honey vs. Cane Sugar.—The magazine Good Health, published at Battle Creek, Mich., contains in its April number an article on "Sugar as a Human Food," by that authority, John Harvey Kellogg, some parts of which are related to honey and its consumption, so we take the liberty of quoting from it:

"In the process of digestion the saliva converts starch into malt sugar, while another ferment, 'maltase,' converts the malt sugar into dextrose. Cane sugar is not acted upon by the saliva, by the gastric juice, by the pancreatic juice or by the ordinary intestinal juice. But far down in the lower part of the intestine there is produced a small amount of ferment known as 'sucrase,' which converts the cane sugar into dextrose and levulose, the same forms of sugar we find in honey.

"A pound of cane sugar when taken into the body is converted into a pound of honey. But it takes four times as long to digest, absorb and utilize an ounce of cane sugar as it does an ounce of malt sugar or an ounce of starch. This is a serious objection to the use of cane sugar, but there is this other and much more serious objection, that cane sugar is an irritant.

"When we take starchy foods, the saliva begins acting upon the starch as soon as it is taken into the mouth. It rapidly converts it into malt sugar, which is little by little converted into molecules of dextrose and passed on as fast as formed into the small intestine.

"This process is a gradual one. The action of saliva upon starch is very prompt, but the amount produced is very small, and it is absorbed as it is produced.

"Starch itself is bland. All farinaceous foods that have been well chewed are much like a poultice in the stomach, soft and unirritating, and the sugar that is produced from the starch is carried off as fast as it is produced. Thus the stomach is not accustomed to the contact of a strong solution of sugar.

"Cane sugar is the most common of all causes of teeth decay. Yet sugar itself does not attack the teeth. It irritates the stomach and causes it to pour out a large amount of acid gastric juice, and that is where the mischief lies.

"Cane sugar causes decay of teeth, also, in another entirely different way. Teeth require lime, and the amount of lime required by the body is 15 to 25 grains a day. This amount of lime is carried out of the body chiefly through the bowels, although to some extent through the kidneys. We must replace that lime every day. If we do not, the body will be gradually drained of lime.

"A certain amount of lime is needed for our intellectual processes. There is a little lime in the brain and in most fluids and tissues of the body, but the lime is found chiefly in the bones, while the teeth also contain a considerable proportion of this most important mineral substance.

"When we do not supply the body with lime the bones are robbed of their store of lime. If, for instance, one is only eating five grains of lime, the body will take 10 to 20 grains out of the bones every single day, and it will take but a few years for a considerable amount of lime to be taken out. It was found by Prof. Virchow that when an animal is deprived of lime it obtains its supply from the least active bones, as the bones of the head and those the least essential to life. It would not do to take the lime out of the arm bones because it would make them flexible, nor to take the lime out of the leg bones, because they would become so limber; so Nature very wisely and sagaciously takes the lime out of the skull bones and the face bones and out of the teeth."

W. J. Forehand.—With the passing of W. J. Forehand one of the best known queen-breeders of the South has dropped out of the ranks. For more than 25 years he was engaged in queen-rearing in Ft. Deposit, Ala. Of late his two sons, N. Forehand and A. I. Forehand were associated with him in the business under firm name of W. J. Forehand & Sons. The boys will continue the business under the same name.

All his life Mr. Forehand lived in the vicinity of Ft. Deposit, having been born there Aug. 11, 1848, and died Feb. 6, 1817. During his early life he was a farmer, and his first interest in bees was as a farm side line. For a time he carried on queen-rearing in connection with his farming, but for nearly a quarter of a century he made beekeeping an exclusive business. He bred 3-banded Italian bees exclusively, and was well equipped for his extensive queen business.

THE LATE W. J. FOREHAND, OF ALABAMA

Labor Saving Devices for Hiving.—Times demand much less expensive labor-saving methods. The old method of lugging around hives to hive swarms from various sections of the yard was too laborious and caused confusion of many swarms and loss of valuable queens, consequently I have adopted the plan of setting my empty hives where they are to remain permanently.

I have prepared half-bushel baskets by fastening the handles permanently so they will not swing from side to side, as the handle left to swing would cut off and kill many bees. One-half of the top of the basket should be covered with a thin board fastened securely to the top of the basket. Now make a hook of No. 9 galvanized wire and and fasten to the top of the handle. This hook should be large enough to hook over a two to four inch limb. When your swarm commences to alight, a cluster about the size of your hand or less should be shaken into the basket. Then hook it fast to the limb and go to your next swarm, if any, with extra baskets and repeat the process, looking out now and then that all are alighting properly.

Now when the first swarm has clustered in and over the basket, take down and replace with an extra empty basket. Should another swarm be drawn or attracted to this same place they will draw in, especially so when a previous swarm has left its odor, as the peculiar swarm odor tends to draw the following swarms that come in that immediate location.

Now carry the swarm that is clusered in the basket to the empty hive that is permanently located a distance away on the opposite side of the apiary.

Turn over carefully and empty close in to the hive being very careful not to cause a flight of bees. The longer a swarm is clustered the less liable it is to take flight, but it should be hived as soon as possible after clustering. When clustered too long they are liable to send out scouts and get a new location of their own selection, and when they do start you are liable to lose prime swarms. In my prime swarms are my profit, as they naturally work with greater vigor and give the desired results.—M. H. MENDLESON, in *California Cultivator.*

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Putting Bees in a Hive Where Bees Have Died

I have one colony of bees in a 2-story 8-frame hive. The bees died about three weeks ago. I think they had diarrhea.

1. Would it be all right in the spring to put three pounds of bees with a queen in a hive and let them clean it out?
2. Would it be better to make two hives out of the one two story hive and put three pounds of bees with a queen in each hive?
3. There is plenty of honey in the hive, but it is beginning to mold. Would this kill the new queen?
4. What is it that makes the comb in the frames moldy?
5. Could I in any way stop the combs from further molding? PENNSYLVANIA.

ANSWERS.—1. Yes, brush off the dead bees, scrape off any filth on top-bars or elsewhere and the bees will do the rest.

2. Yes, provided you want to have the additional colony.

3. No.

4. Mold. It is a minute vegetable growth favored by warmth and moisture.

5. Put them in a dry, sunny place.

Destroying Queen-Cells—Transferring—When to Extract

1. When cutting out queen cells do you cut them all out or do you leave one?
2. I have three stands of bees in box-hives, can I take the bottom out of the box-hives and place them on top of standard hives? How long will it take the bees to make their home in the standard hives? Would it be all right to place a queen excluder between the two hives about three or four weeks after they commence to work in the lower hive, and could I leave the queen excluder on until all the young bees are out of the the top hive, then take it off? Can I transfer these bees this way without danger of a swarm?
3. Will it pay me to change from comb to extracted honey when I can get 15 cents a pound for either?
4. How long should comb honey be sealed over before I can extract it, without danger of it becoming granulated? ILLINOIS.

ANSWERS.—1. Cut out all when your object is to prevent or delay swarming. If you are doing it to prevent afterswarms, then leave one.

2. If the box-hive be small, the bees may begin work in the lower hive within a week. If it be large enough it may take a month. Don't wait three or four weeks, but put the excluder between the two stories just as soon as the queen is in the lower story, and three weeks later all the worker-brood will have emerged. With this management there would be no swarming.

3. Yes, indeed.

4. Except in rare cases honey may be extracted as soon as all sealed, although it is better to wait longer.

How to Trace from Where a Swarm Issues—Uniting

1. I keep some bees, and when they swarm I hardly ever see them until they are in the air, settled on the branch of some tree. What bothers me is to tell what hive they emerged from, for when I get them hived I want to put them back on the old stand.

2 I have read somewhere that in order to unite two swarms of bees or to introduce a queen to them a good plan is to wet them thoroughly with a fine spray of water to which has been added oil of peppermint, so that they will have the same odor, and therefore, will not be able to detect any strangers among them. Now in using this method how would I reach all, or nearly all, of the bees with the water? Would you take the cover off and spray over the racks and let what would run down among the racks?

MICHIGAN.

ANSWERS.—1. You can generally tell pretty well by looking at the entrances of the different hives, even if you don't look until the swarm has settled. Few bees will be seen starting for the field, and you may see some very young bees crawling on the ground not far from the entrance. If you fail in that, go ahead and hive the swarm, setting it temporarily two rods or more from its old stand. Take a pint or so of the bees of the swarm, dump them on the ground some two rods away from the swarm, and quickly dust them with flour, and hurry to watch for floury bees entering their old hive. If you are suspicious, but not certain, of some colony, open the hive and look for sealed queen-cells and a scarcity of bees, and also for a small proportion of the brood unsealed.

2. If you try that plan, take peppermint essence, not oil, and it will be well to sweeten the water. Yes, take off the cover and spray over the top-bars. If the bees scattered around are not considerable in number, it is not necessary to spray them.

Foulbrood

In October last, when arranging my bees for winter, I noticed in colonies Nos. 2 and 3 a few cells of brood affected. There being only a few and at the close of season, it did not bother me very much. The past winter being very severe, little if any brood was reared before the latter part of February. Having left them plenty of stores it was the only attention I gave them only to listen at the entrance to tell if all were quiet. Being unable to make an examination before March 24, I found at this date No. 3 robbed, leaving a few cells of affected brood, showing the queen had begun to lay. Numbers 1, 4, 6 and 10 brought to their hives this disease from No. 3, I am sure.

1. If this disease is transmitted in the honey how can a cure be effected by removing the queen until all brood is hatched and the bees clean house? Is not the affected honey there still? In the American Bee Journal for April, 1915, on page 129, paragraph 4, it reads as if the disease was transmitted by the queen also. Would you recommend requeening in my case, where the disease has only a weak start?

2. What do you think of the water treatment for foulbrood as described on page 173, May, 1915, of this same Journal?

3. Has this been tried out by many?

4. Is there an inspector for this State? If so, can you give his address? MISSOURI.

ANSWERS.—Just between you and me I'll tell you that there's a whole lot of things about bees that I don't know very much about, and this foulbrood business is one of them. I don't know for sure just how European foulbrood is first brought into a hive, whether in the honey or whether a bee that brings honey from a diseased colony brings spores on its feet or brings them in the honey. But after the disease is once in a hive I *think* it's continued, not by the honey, but by the nurses eating the juices of the diseased larvæ, and I *know* that a cure generally follows if there is a break of sufficient length in the rearing of brood

1. Yes, on the page you quote it certainly looks as if the queen carried the disease, and so would continue it in her own colony. In spite of that, if I had a mild case, and the queen was valuable, I'd try caging her ten days.

2. I don't know anything about the water treatment personally, and have no fixed opinion.

3. I do not suppose it has.

4. Yes. He is M. E. Darby, of Springfield.

Cutting Out Drone-Comb

When is the best time of year and the best time of day to cut out drone comb, and how can it be replaced with worker foundation? PENNSYLVAINIA.

ANSWER.—The best time is a matter largely of the beekeeper's own convenience. Other things being equal, there is no better time in the year than spring or early summer, after bees are in full flight and before the combs begin to be filled with honey. It doesn't matter about the time of day, unless you have to do with combs that contain brood, in which case it should be in the heat of the day. Generally, however, it can be managed so that you will have no brood in the combs to be mended, and little or no honey.

To replace drone comb with worker foundation, cut out the drone-comb, and then on one side trim away the cells so as to expose a margin of perhaps one-fourth inch of the septum. Cut your patch of foundation to fit the hole and cover the exposed septum Unless the day or the room is very warm, you must in some way heat the foundation so that it shall be warm and soft, and then press down quite firmly the edge of the foundation upon the margin of the septum. Instead of using foundation it may be still better to use patches of worker-comb just large enough to fit quite snugly into the holes.

Color of Carniolans—Putting on Supers

1. I noticed in the March American Bee Journal that you say the Carniolan is a black bee, and in an article in the April Bee Journal by Frank Rojina, it is stated that the Carniolan bee is in color silver or light gray. Now, who is right?
2. When is the best time to put supers on the hive? INDIANA.

ANSWERS—1. If you expect to find Carniolans the color of the print on this page, you will find yourself mistaken. Equally mistaken will you be if you expect them to be in color silver, looking just like a new siver dime. But if you will compare them very carefully with what are called black bees, you will find there are bands inclining to the color of silver, allowing one to say they are silver color. Strictly speaking, what we call black bees are very far from being black. And if you will look again you will see that I did not say that Carniolans are black, but that they "are so much like the blacks in appearance that it is hard to distinguish them." And that's true, too; for unless you look closely and carefully you will hardly notice the small part that differs from the blacks.

2. Put on supers when you see the very first blossom on the plant you expect your first harvest from, which with you is probably white clover.

Swarms—Caucasians—Beginning in Bee Business

1. If bees are kept in one story hives all summer, how many times will they swarm?
2. Are the gray Caucasians better for outdoor wintering?
3. Will the gray Caucasians work better on red clover than the Italians?
4. How can I get a good start in the bee business? IOWA.

ANSWERS.—1. If the hive is large enough, a colony may not swarm at all; if small enough, even as small as an 8-frame hive, with no additional room given, a colony may swarm one to eight times, and possibly not at all.

2. Probably not.

3. I don't think so.

4. That depends. If you can buy full colonies in your own neighborhood, that's your best chance. If you send away, it's a question between buying nuclei or bees by the pound. With little or no experience, it would be better to buy nuclei.

American Foulbrood—Colonies Stealing Eggs

1. Is there any way that you know of that would be safe to use extracting combs taken from colonies affected with American foulbrood the same as European foulbrood?
2. What is your plan for treating American foulbrood?
3. Is it safe to treat colonies affected with American foulbrood?
4. Have queenless colonies ever been known to steal eggs from other colonies to rear a queen?
5. Do you know if queens are ever mated with drones produced by laying workers? KANSAS.

ANSWERS.—1. There would be a risk, and I know of no special plan or treatment that would lessen the risk. Yet if the disease is rather common in the neighborhood it might be worth while to try using such extracting combs.

2. I never treated but one case of American foulbrood, and that was by fire. I burned up bees, combs, frames, everything but the hive; I couldn't get that in the furnace door. And that's the advisable plan with only one or two diseased colonies. If I had a number of cases I should use the usual brushing plan.

3. No, indeed.

4. They have been said to do so; I don't know whether it is correct or not.

5. I don't know; I suppose it is possible, but doubt its frequent occurrence.

Transferring

I hived a swarm on narrow starters last year. They built combs in every direction so that I cannot move a frame. I would like to requeen. Will it be best to drum them into an empty box and kill the queen? OKLAHOMA.

ANSWER.—Perhaps it would be as well to wait until they swarm, hive swarm in good hive, and break up old colony 21 days later.

Size of Hive for Wintering—When to Put On Super

1. Will the body of an 8 frame hive hold sufficient food for a strong colony to winter?
2. Should inner cover under lid be put on in summer?
3. Should supers be put on when bees are unpacked in spring?
4. What causes water in honey at this time of year?
5. Can combs partly made or partly filled in the fall be put back with supers in spring? ILLINOIS.

ANSWERS.—1. The body is large enough to contain abundance of food, but often it does not contain enough. If the combs are mostly filled with brood until late in the season, there may be a shortage of stores. If I should leave my 8-frame hives to themselves from fall to next harvest, I should expect many of the colonies to starve.

2. I don't know just what the arrangement is, but at a guess would say it might be kept on.

3. No, indeed; in your locality supers should not be given before the first clover-bloom opens.

4. Probably the condensation of vapor that comes from the bees.

5. If they are combs in sections, it is not well to use them unless the bees cleaned them out in the fall. Brood-combs may be used all right, but if honey has been left over winter in extracting combs the honey stored in them will be affected by it.

Royal Jelly—Aster Honey

1. What is royal jelly and what does it look like?
2. What is Ester honey? IOWA.

ANSWERS.—1. It is the food given by the nurse-bees to the larvæ in queen-cells. It looks a little like thick milk; but what is left in the cell after the young queen emerges is more solid, looking more like jelly.

2. I think I never saw mention of Ester honey. Perhaps you mean aster honey, which is gathered in the fall from asters, being rather dark and strong in flavor.

Miscellaneous

1. What is the best method to use to find the queen?
2. Are the golden bees of the Italian breed or are they of another race altogether?
3. What is the difference between the Carniolan and Caucasian bees?
4. Can artificial or Weed process of comb be told apart from the original article when placed side by side?
5. Of what breed are the leather-colored bees?
6. If a person wishes to increase his colonies, which way would be better, by swarming or by dividing?
7. Which is the better hive for this locality, the single-walled hive or the double-walled?
8. What is the best food for bees, if they have to be fed?
9. Will not the European war greatly interfere with beekeeping in Europe?
10. What is the lowest price in history that honey has sold for?
11. What is the highest price in history that honey has sold for?
12. Is swarming entirely useless, and is it a waste of energy and time?
13. Will bees build the comb straight in sections where comb foundation is not used?
14. What breed of bees is the gentlest?
15. Is there any country where movable-frame hives have never been introduced? ILLINOIS.

ANSWERS.—1. There is no given rule. Don't use much smoke, and go about it quietly. If you stir them up so as to get the bees to running, shut up the hive until an hour later or until another day. Look on the combs where the brood is, although sometimes she may be elsewhere, even on the bottom or sides. If you don't find her after looking the combs over two or three times, give it up until another time.

2. They are Italians with more yellow than the original Italians.

3. Carniolans swarm more, and some strains of Caucasians are gentler.

4. I doubt if you or I could tell the different kinds apart; the manufacturers might.

5. Italians.

6. That depends on circumstances. One with not very much experience, who can be on hand to watch for swarms may do best to leave the matter of increase to the bees, only insisting that there shall be no second swarms. Those who can be with their bees only part of the time should take increase into their own hands. The experienced may do either or both ways.

7. All things considered, perhaps the single-walled hive is better.

8. Nothing equals good honey. Granulated sugar, in syrup or candy, comes next.

9. It has interfered greatly, although in some parts the business is said to be going on much as usual.

10. I don't know. The lowest I have heard of has been giving it away, although it is possible a reward has been paid for taking it.

11. I don't know. I have read of its being sold for a dollar a pound or more.

12. In its proper time and place it is very useful. For practical beekeepers it is pretty generally worse than useless.

13. No.

14. Hard to say. Caucasians have had that reputation, but some Caucasians have been reported as vicious.

15. Likely, but I don't know.

Size of Tin Top Cover

What size do you find or think most convenient for your ⅜-inch dead air space, tin top cover? WASHINGTON.

ANSWER.—Mine are just the width of the top of the hive. Some are just the length, and some ½ inch longer. I think I like the latter rather better, because less care is needed in putting on the cover.

Color of Breeds

1. What color are the Italian queens? What is the difference between the Italians and blacks?
2. What is the use of having a division-board in a colony?
3. What color are the queen cells just after they are built, and what color are they just before the virgin hatches? NEBRASKA.

ANSWERS.—1. The color varies from a bright yellow to the color of a black queen. But the workers should not vary but each have three yellow bands. In general, Italians differ from blacks in gathering more honey and defending their combs better from the depredations of the bee-moth.

2. What is sometimes called a division-board is really a dummy. It is used at the side of the hive so that it will be easier to take out the frames after the dummy is taken out. Some, however, prefer not to have the dummy.

3. When a queen-cell is built it is likely to be much the color of the brood-comb on which it is built. If this be old and dark, the cell will be rather dark, although never so dark as a very old comb; while on a new comb it will be light, growing a little darker at the time the virgin emerges.

Shook Swarming, Etc.

1. Please tell how shook swarming is done, and if you advise such swarming?
2. What do you think of this, to contract a 10-frame hive to only six frames just before the main honey flow and put dummies in place of the frames. Will this force the bees to go into the supers faster or will the brood-nest be too small for brood-rearing and force the queen to go into the sections and lay eggs?
3. If I have 100 swarms this fall and only want 50 hives in the cellar, should I kill 50 of them and extract the honey from the combs, or should I unite the swarms? WISCONSIN.

ANSWERS.—1. Shake swarming is advisable in many cases, especially where it is not feasible to be on hand to watch for natural swarms. To shake a swarm you simply shake or brush all or nearly all the bees from all but one comb of brood, leaving in the old hive the queen with all or nearly all the bees, the one comb of brood, and filling the hive with frames filled with foundation or else with drawn combs. The disposal you make of the combs of brood taken away depends on circumstances.

2 Whether the queen goes up or not you will not be likely to get as good results as to leave all the brood. Might try one or two cases to see for yourself.

3. Better unite; and it might be better to wait until the following spring before uniting.

Distance of Frames—Queen Excluder—Queen Introduction

1. (*a*) What should be the distance between bottom-board and frames? (*b*) Between top of frames in brood-chamber and bottom of frames in super?

2. Is it necessary to use a queen-excluder? If yes, when?

3. Do you consider the "wire entrance guard," as shown in Root's catalog, page 33, adequate to prevent losing swarms when the apiarist is away all day?

4 What are the exact measurements, inside, of a 10 frame hive, full story?

5. What is the best method to introduce a queen, and when is the proper time?

NEW YORK.

ANSWERS.—1. (*a*) The distance varies from half an inch to 2 inches. (*b*) About ¼ inch.

2. It is not necessary unless for some reason you want to prevent the queen from going where workers are allowed to pass In working for section honey, excluders are not needed provided the sections are *filled* with foundation. Generally they are used for extracted honey during the time supers are on.

3. Yes, provided there is no crack anywhere about the hive that will let the queen out.

4. There has been no little variation, and I don't know that there's any fixed standard. There is, however, a standard for the Langstroth frame, which is 17⅝x9⅛, and the hive must be of such size that there shall not be less than ¼ inch between the ends of the frames and the sides of the hive, and between top-bars of the lower story and bottom-bars of story over.

5. Some say one way is best, some another. Perhaps the most general way is by means of a provisioned queen-cage, allowing the bees to eat the candy and release the queen.

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I AM NOW prepared to supply you with Golden 3-banded and Carniolan queens. Give me a trial and be pleased. Tested, each, $1.00; 12 or more, 85c each. Untested, 75c each; 12 or more, 65c each. Ten percent discount on orders booked 30 days before shipment. No credit; no c. o. d. shipments.
I. N. Bankston, Eagle Ford, Tex.

Golden 3 Band Italian and Carniolan queens: Virgin, one, 50c; 6, $2 50; 12, $4.00; 100, $25. Untested, one, 75c, 6, $4.20; 12, $7.80; 100, $60. Select untested, one, 85c; 6, $4.80; 12, $9.00; 100, $70. Tested, one, $1.00; 6, $5 40; 12, $10.20; 100, $80. Select tested, one, $1.25, 12, $13.80; 100, $100. Breeders, $3 00 each.

Bees in packages without combs: ½-lb., 75c; 1-lb., $1.25; 2-lb, $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2 25; 3 frames, $4.00. Add price of queens wanted. We guarantee safe arrival and no disease.

C. B. Bankston, Buffalo, Tex.

Gray Caucasians, an exceptionally vigorous, prolific, long lived race. Early breeders, gentle, and best of honey gatherers. Untested queens, $1.50. Select unt., $2 00. Tested, $3.00. Select tested, $3 50. After June 20th, untested, $1.00. Select unt., $1.25. Tested, $2.00. Select tested. $2.50. Improved northern bred Italian queens as good as the best at same prices. If you desire Caucasian queens, please let me book your order early. Ask for circular. F. L. Barber, The Queen Breeder, Lowville, Lewis Co., N. Y.

For Sale—Famous Root's, Moore's, Davis' extra select strain of honey gatherers. Mated with Geo. B. Howe's select drones; unsurpassed for honey gathering, gentleness and disease resisting. Most all leading beekeepers say no better bees than 3-band Italians. See my large ad in May issue.

Untested, 1, 75c; doz., $8.00; ½ doz., $4.00. Select untested, 1, $1.00; doz., $8.50; ½ doz., $4.50. Tested, 1, $1.25. Select tested, 1, $1.50 Extra select tested, 1, $2 00. Breeders, $5.00 Bees with queen, per lb., $2 50; 6 lbs., $12; 12 lbs., $20. Try my bees and queens.

H. B Murray, Liberty, N. C.

For Sale—Three-band Italian bees and queens. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. We are now shipping bees and queens daily. Bees are all in standard hives, Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease.

Bees without queen: Three-frame nuclei, $2.25; 2-frame nuclei, $1.75; 1-frame nuclei, $1.25. Three-lb. bees, $3 25; 2-lb. bees, $2.25; 1-lb, $1 50. 3-band Italian queen, untested, 75c. Tested, $1.00. If queen is wanted, add price of queen.

The Hyde Bee Co., Floresville, Tex.

HONEY AND BEESWAX

Wanted—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

Wanted—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

Wanted to Buy a quantity of dark and amber honey for baking purposes.
A G Woodman Co., Grand Rapids, Mich

For Sale to the highest bidder a limited quantity of Michigan's best white extracted honey, in 60-pound tins.
A. G Woodman, Co., Grand Rapids, Mich.

Comb Honey our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

To Sell or exchange for bees or hives extra fine red or yellow Carneau Pigeons, Lafrauiere stock; breeders of very large squabs Write Isabella E Jewell, Vineland, N. J.

Wanted—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send samole with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

Wanted—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.

The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

Honey Wanted—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

Northwestern Beekeepers! Save time and freight by ordering supplies (at catalog prices) near home. Geo. F. Webster,
Valley View Farm, Sioux Falls, S. Dak.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

Wanted—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

Bee-Keeper, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

SUPPLIES.

For Sale—Fifty 8-frame hives; used but in good condition; painted; complete with frames; no combs, with Higginsville cover and reversible bottom, at $1.00 each or $45.00 for the lot. The M. C. Silsbee Co.,
Cohocton, Rt. 3, N. Y.

HONEY LABELS

Honey Labels of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

Honey Labels.—We have just issued a new and up-to-date catalog of honey labels and stationery. Write for your copy. Neat labels and quick delivery guaranteed.
American Bee Journal, Hamilton, Ill.

MISCELLANEOUS

25 Ladies' Coots, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

WANTED

Wanted—75 or 100 colonies of bees; 10-fr hives; wired frames. Price reasonable.
P. O. Box 596 "U" Farm, St. Paul, Minn.

Wanted—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

Field Meet at Denver

The Field Meet of the Colorado Honey Producers' Association will be held at Denver, Saturday, June 16. The Colorado meetings are helpful in every way, and those who do not attend will miss a rare treat. Every one interested in bee-culture is invited to attend. Write for further particulars to The Colo. Honey Producers' Ass'n.
Denver, Colo.

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Statement of Ownership, Management, Circulation, Etc.,

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[Signed] M. G. Dadant, *Manager.*

Sworn to and subscribed before me this 14th day of April, 1917.

[seal.] R. R. Wallace.
Notary Public.

My Commission expires Sept. 22, 1917

HONEY AND BEESWAX

Chicago, May 18.—As we are entirely cleaned up on honey, both comb and extracted, we find it difficult to quote prices, although there is still a call for it.

Beeswax brings 33@35c per pound, according to color and cleanliness.

R. A. Burnett & Co.

Kansas City, Mo., May 15.—Number 1 comb honey is selling generally, around $3 25 per case, but there is not very much on hand. However, the demand seems to be rather light. The market on extracted honey is very firm, price ranging around 11@12c a pound, and none of the dealers have very much on hand. As regards the supply of extracted honey in Kansas City at the present time, when compared with last year, we think it is considerably lighter.

The market on beeswax is 33@35c a pound.

C. C. Clemons Produce Company.

Denver, Colo., May 16.—This market is cleaned up on both comb and extracted honey, excepting a small quantity of extracted honey which we are reserving for bottling purposes. We are, however, in the market for beeswax, and are now offering 38c in cash and 40c in trade for clean yellow stock delivered here.

The Colo. Honey Producers' Ass'n.
F. Rauchfuss, *Magr.*

San Antonio, May 18.—Honey markets are still bare of both comb and extracted. At this time last year one-fourth of all our summer surplus was being shipped. This year not a carload has been shipped from Texas. Delay has been occasioned by drouth and retarded spring. Wholesale prices on new crop of extracted honey is 10c and comb honey is 12c. Retail prices in principal markets range from 15@20c per pound. Beeswax is in strong demand. Local lots bring 30c cash and 32c in trade.

Southwestern Bee Co.

Chicago, May 22.—Honey is finally cleaned up, both comb and extracted. It was a long, hard seige to get cleaned up, as honey did not look very well towards the close, and considering the high prices in other commodities, it seems strange that honey did not do better. However, we will add that extracted honey seemed to be in better demand, as the consumer realized he could get the pure stock done up in this manner, and starting in with next season we would not be surprised to see an improved demand for the extracted honey.

Beeswax is quotable from 32@35c per pound. Coyne Brothers.

New York, May 17.—Comb honey is well cleaned up, but there is still a fair demand for No. 1 and No. 2 fancy white at around 13@14c per pound, according to quality and quantity. There is no demand at all for the lower grades. Extracted honey is in good demand and very little stock on the market at this time. The new crop is beginning to arrive now quite freely from the South, and finds ready sale, prices ranging from 90c to $1 25 per gallon, according to quality.

Beeswax is steady, prices from 40 to 42c.

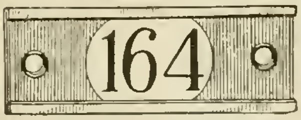
Hildreth & Segelken.

Murry's Queens

THREE-BANDED ITALIANS
GOLDEN ITALIANS

The best of either. Orders filled in rotation or money refunded. Untested, 75 cents. Tested, $1.00.

H. D. MURRY, Mathis, Texas



Colored Bee Hive Markers

Prices—12 for 20c; 24 for 40c; 50 for 75c; 100 for $1 25. Large quantities, write us. Made in many colors. Furnishes means for a better control of the bees. Sample and catalog free.

Arthur P. Spiller, Box H, Beverly, Mass.

Crop Reports and Market Conditions

CROP AND MARKET REPORTS

The Government report for May 1 has just been issued. It gives a general summary of the following factors: Winter losses, number of colonies compared to May 1 last year, condition of colonies compared to normal, and condition of honey plants compared to normal. Our summary which follows is a combination of our own reports with those of the government.

WINTER LOSSES

In New England, the losses are about average, those colonies wintered in cellars appearing in worse shape than those wintered outside with protection. Spring dwindling has been common there as well as in New York, and, in fact, all the East, with losses about the same as in New England.

For the Central States conditions are probably normal, or a little better, with losses averaging around 10%. In fact, the whole country has an average loss, according to the Government report, of 10%, as against a loss of 13% last year. Heavy losses prevail in the following states: North Carolina 30%, Montana and Wyoming 20%, Idaho 46% and Utah 30%.

The number of working colonies for the crop is much larger than last year, owing mostly to the excessive crop of the Central States, where the increase has been marked.

CONDITION OF COLONIES

No doubt but that condition of colonies was below normal on May 1, as reported by the State Department, but the last two weeks have seen a remarkable change. The early cool weather caused general dwindling and losses were not infrequent. In the north half of the country the bees' condition is still below normal, but in the South Central States bees are beginning to "boom," and swarms are reported.

The queen-breeders and pound-package men of the South have been under a handicap on account of the late spring, and most of them are overwhelmed with orders which ordinarily could have been filled weeks ago. Purchasers should make due allowance for this.

HONEY PLANT CONDITIONS

Clover prospects in the Eastern States are normal, with a fair crop prospect. In the Central States the clover plants are from 75 to 90% of normal, with conditions improving as the time of the clover flow draws nearer. In North Carolina a good flow is now on. Florida reports the early crop good, but the weather too cool. The whole Southeast is in a similar condition, with prospects below normal. In Texas the first crop has been a failure and prospects are not flattering for the later flows.

It is too early to estimate general conditions for the West, though they seem about normal. On the coast line prospects are fair, and poorer inland.

SALES, OFFERS, PRICES

Generally speaking, all old honey is cleaned up. Very little of the new crop is ready for the market. One Chicago firm offers a car of white California extracted at 13c, which they consider a bargain, as the bulk of the new crop will not be in for a month or more.

A few sales in advance are being made at prices ranging from 8c to 10c for white honey. The bulk of the producers, however, prefer to wait till the crop is harvested before selling.

It is the opinion of most reporters that there will be an active demand and the price will be very high. One noted California producer, who is not selling ahead, states that it is not difficult to find buyers if you but set a price. One large bottler is offering 9c for white extracted and furnishing the containers.

The demand for foreign shipment is extremely large and bottlers seem anxious to buy a season's supply before exporting commences. Many reporters insist on a minimum price of 10c for extracted, and a few think it should be worth 12c in a wholesale way.

Almost everyone states that local sales are going to be larger than ever before, and at good prices. What with the sugar shortage which will be felt, especially if exportation is not curtailed by the curb of the submarine warfare, honey prices should rule high. Honey should, as one reporter remarked, command a price in proportion to its worth.

With such conditions and in order to carry out the suggestions of what is best for our country, let us all strive by every means to make the 1917 honey crop as large as possible.

Quality Service System

BUY MARCHANT'S QUEENS AND GET RESULTS—RE-QUEEN NOW

We have in operation over 1000 nuclei. We are prepared to take care of your orders, both LARGE AND SMALL. Our queenbusiness for the past two months has been larger than ever before. Why? Because our stock gives results. We are offering queens at the following prices for JUNE, JULY, AUGUST AND SEPTEMBER:

	1	6	12	25	50	100
Untested	$1.00	$ 5.00	$ 9.00	$16 00	$30 00	$52.00
Tested	1.50	8.00	15.00			
Select tested	2.00	10.00	18.00			

Breeding queens, $ 5 00

Sel. breeding queens, 10 00

Never before has this strain of bees been put on the market at such a low price. Take advantage and requeen your yard with the best strain on the market.

J. E. MARCHANT BEE & HONEY CO.

Columbus, Georgia, U. S. A.

(*The home of the southern honeybee.*)

QUEENS of MOORE'S STRAIN of ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens $1 00; 6 $5 00; 12, $9 00
Select untested, $1.25; 6 $6.00; 12, $11 00

Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE

Queen-breeder Rt. 1, Morgan Ky.

Southern Beekeepers

Get the famous Root goods here; veils, 65c; smoker, 90c; gloves, 65c; wire imbedder, 35c; honey knife, 80c; 1-lb. spool wire, 35c; medium brood foundation, 1 to 11 lbs., 58c per lb.; 11 to 25 lbs., 56c; 50 or 100 lb. lots, 53c; 10-fr. wood zinc excluders, 50c each. Hoffman frames, 3 75 per 100. Honey extractors for sale. I am paying 28c cash and 29c in trade for wax.

J. F. ARCHDEKIN, Bordelonville, La.

Government Market Reports

Beginning July 1st, we are informed that under the direction of the Government there will be issued a bulletin giving the daily, weekly and monthly market movements of honey.

The bulletin will be very wide in scope, as it will not only give the movement of all carload shipments of honey in all sections of the country as well as the exports, but it will also give the prices ranging in different cities on carload sales. These are bound to be accurate, as they will be taken from the books of the merchants handling such sales.

We urge all our subscribers interested in selling their honey away from home to get in touch with the Department and get put on the list so that they may get the bulletin referring to honey movements. It is free to all who apply.

Not only will it be of service to those who sell honey in carlots away from home, but it will also help in determining the prices which would prevail in local sales of honey.

A more complete summary of what is to be undertaken will be given in our next issue.

HONEY LABELS

Nothing is more inducive to stimulate home sales of honey than a good label, while a poor label will detract much from an otherwise salable article.

Our new Honey Label catalog, just off the press, is up to-date in every way, and contains many different designs of labels, some of which should be just to your taste.

Besides we list letter heads, envelopes, stickers, the booklets, "Facts About Honey," etc.

Write for a copy of our label catalog today. It is free. It contains designs which will help you in promoting locally your sales in honey, both comb and extracted.

AMERICAN BEE JOURNAL
Hamilton, Illinois

WANTED—Experienced queen-breeder and all-around bee-man, one that is a hustler and knows the business. Young unmarried man preferred. We furnish board and lodging. Write us your age, experience, etc., with lowest wages in first letter.
The Penn Co., Penn, Miss.

First Lessons in Beekeeping
—*By C. P. Dadant*

Just as its name indicates, this new cloth-bound book is to give the beginner the fundamentals in beekeeping. Beginning with a short but comprehensive natural history of the bee, it takes every subject in order, including the packing and marketing of honey. The chapters are as follows:

NATURAL HISTORY
ESTABLISHING AN APIARY
HIVES
SWARMING AND QUEEN-REARING
IMPROVEMENT IN HONEYBEES
COMB FOUNDATION
WINTERING AND FEEDING
BEE PASTURAGE
ENEMIES OF BEES
DISEASES OF BEES
MARKETING HONEY
PRODUCTION OF HONEY

The book is well illustrated and should be in the hands of every beekeeper. Bound in gray cloth and containing 178 pages, it is very attractive.

We offer it postpaid for $1.00, or with the American Bee Journal one year for $1.75.

American Bee Journal, Hamilton, Illinois

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal.
Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.
Well illustrated and up-to-date. Subsciption price postpaid.
Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year
Sample copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

THE CAMBPELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

GOLDEN ITALIAN QUEENS

Read a few reports of big yields from single colonies of this gentle strain of Goldens: H. E. Bartz, Keytesville Mo., 264 pounds of extracted honey; J. M. Buchanan, Franklin, Tenn , 250 pounds of extracted honey; L. C. McCarty, Nampa, Idaho, 250 pounds of comb honey; Fred Dury, Unionville, Mo., 374 pounds of comb and extracted honey.

I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—*Prices of Queens*—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Select queen tested for breeding, $5.00. - The very best queen tested for breeding, $10.00

BEN G. DAVIS, Spring Hill, Tennessee

FOREHAND'S QUEENS

15 LBS. SURPLUS ☜ ***Which Colony is Yours, Mr. Beekeeper?*** ☞ **150 LBS. SURPLUS**

GET A GOOD QUEEN

One that will keep the hive chock-full of bees at all times, make the biggest yields of honey, stingless, and look the prettiest at a medium price. Over 25 years of select breeding has brought our queens up to a standard surpassed by none and superior of many. We have tried the principal races and every method known, and we have now selected the best of both. THE DOOLITTLE METHOD and the THREE-BAND BEES. Use the 3-Bands. Why? Because they get results. The foremost bee-men of the world use them. Our queens are sold by many of the largest dealers in the United States.

Louis H. Scholl (one of the largest beekeepers of the Southwest) says; "Three-band Italians have proven the best all-round purpose bee after trying out nearly every race, not only in an experimental way while still at A. M College, but in our own apiaries as well."—(*In Beekeepers' Item.*)

	1	6	12		1	6	12
Untested	$ .75	$ 4 25	$ 8.00	Tested	$1.50	$ 8 75	$17.00
Select untested	1 00	4.75	0.00	Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

TYPEWRITER SENSATION

$2⁵⁰ a Month Buys A Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.

H. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

QUEENS OF QUALITY

Capacity of my yards over 1000 Queens a month

After 20 years of careful selection and breeding, I now have a strain of bees that cannot be excelled by any. My queens are all bred from IMPORTED STOCK, the very best in the world for honey gathering and gentleness. They are not given to swarming. What more do you want in bees than the three above qualities?

GUARANTEE

You take no risk in buying my queens, for I guarantee every queen to reach you in first-class condition, to be purely mated and to give perfect satisfaction. All queens that do not give satisfaction I will replace. Send for circular.

PRICES APRIL 1ST JULY 1ST

	1	6	12
Untested	$ .75	$ 4.25	$ 8.00
Select untested	.90	5 co	9.00
Tested	1.25	7.00	13.00
Select tested	2.00	11.00	20.00

L. L. FOREHAND, Ft. Deposit, Alabama

EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1.00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
Loreauville, Louisiana

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50 Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Point Pleasant, Pa.

TEXAS QUEENS

Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

GRANT ANDERSON
Rio Hondo, Texas

3-BANDED ITALIANS

From May 1 until June 1

Untested, $1 00; 6, $4.50; 12, $8.00. Tested, $1.25; 6, $5 50; 12, $10.50

From June 1 until Nov. 1

Untested, 75c; 6, $4.00; 12, $7.50. Tested, $1.00; 6, $5.00; 12, $0.00. Select tested $2.00 each. Circular free.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

QUEENS

Quirin's Improved Superior Italian Bees and Queens They are Northern bred and hardy. 25 years a Queen Breeder.

Prices	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested..........	$1 00	$ 5.00	$ 9 00	$ .75	$ 4 00	$ 7.00
Tested....................	1 50	8.00	15 00	1.00	5.00	9 00
Select tested.............	2.00	10 00	18 00	1.50	8 00	15 00
2-comb nuclei.............	2.50	14.00	25.00	2.25	12.00	22 00
3-comb nuclei.............	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colonies..........	6.00	30.00		5 00	25.00	
10-frame colonies.........	7.50	38.00		6.00	32.00	
½-pound package bees..	1.50	7.00		1.00	5.00	
1-pound package bees...	2.00	10.00		1.50	8.00	

BREEDERS.—The cream selected from our entire stock of outyards; nothing better. These breeders $5.00 each.

Can furnish bees on Danzenbaker and Langstroth or Hoffman frames.

Above price on bees by pound, nuclei, and colonies does not include queen You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out until first of June. Also nuclei and colonies, if wanted before June 1, add 25 percent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit Send for testimonials. Orders booked now.

Reference any large supply dealer or any bank having Dun's reference book.

H. G. QUIRIN, Bellevue, Ohio

BEES

If you are thinking of buying bees this spring, we would be pleased to hear from you. We furnish full and nucleus colonies, bees by the pound, and queens.

A strong colony of Italian bees with a tested Italian queen, in a new 8-frame dovetail hive, complete with super, for $11 00. Tested Italian queens, $1.50. Untested, $1.10.

Our catalog of bee supplies, honey jars, and everything a beekeeper uses, mailed upon request.

I. J. STRINGHAM
105 Park Place, New York
Home Apiary: Glen Cove, L. I.

BEE-SUPPLIES

Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 206 sections and gave two swarms. I am well pleased.

MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested............75 cts. each; $65.00 per 100	Tested.......$1.25 each; $110.00 per 100
Select untested.....90 cts. " ; $75.00 " 100	Select tested 1 50 " 125 00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

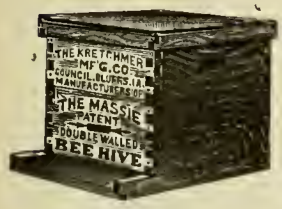
LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

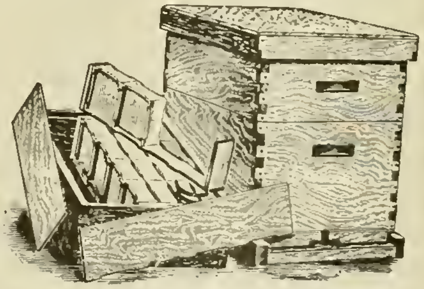


THE MASSIE HIVE
For Comb or Extracted Honey

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

ENLIST

In the growing army of honey-producers who are preparing to do their bit for Uncle Sam and the Allies, by endeavoring to secure a bigger crop of honey than ever before.

Prospects are bright for a bumper yield. Are you ready for it? Don't wait for prices to soar again, but place your orders now.

THE A. I. ROOT COMPANY
Medina, Ohio

DOCTOR MILLER'S

Thousand Answers to Beekeeping Questions

Is the new 280 page cloth bound book, just out. It is a compilation of some 1000 questions out of more than 10,000 that Dr. Miller has answered for beekeepers in the American Bee Journal in the last 22 years.

In that time he has answered questions on nearly every conceivable subject from Absorbents to Yellowjackets, from Blacks to Goldens, from Spring Dwindling to Spring Stimulation, and from rank Honeydew to the finest flavored Alfalfa or Clover.

Several methods of Increase are given, also several methods of Swarm Prevention, Queen Rearing, Queen Introduction, etc., all with variations.

NOT INTENDED TO SUPPLANT OTHER BEE BOOKS BUT TO SUPPLEMENT THEM

Answers are written in that inimitable style which we have learned to look forward for, from that "Nestor of American Beekeeping." Nor is the keen wit of the Doctor lacking.

You know Dr. Miller, and you can look forward to an invaluable series of answers. You should know the American Bee Journal. C. P. Dadant is its Editor, Dr. Miller himself is Associate Editor, and Frank C. Pellett is Staff Correspondent.

"Doctor Miller's Thousand Answers" was compiled by Maurice G. Dadant, of the American Bee Journal staff, and is offered only in combination with a year's subscription.

Price of both postpaid only $1.75.
(Canadian postage 10c extra, foreign 25c)
Order today—the book will be sent by return mail

American Bee Journal, Hamilton, Illinois

"Griggs Saves You Freight"

TOLEDO

Is the place to order your 1917 supplies from, and GRIGGS is waiting for your order

We are well supplied with a fine stock of Root's Goods for the following season; and if a saving of time and money means anything to you, Mr. Beeman, wherever you are, don't overlook getting our catalog and prices.

Promptness and satisfaction is our motto, whether you have one hive or 500.

HONEY and Beeswax always wanted. Special price list on bees and queens, also Poultry Feeds, mailed with catalogs.

S. J. GRIGGS & CO.
Dept. 24 Toledo, Ohio
"Griggs Saves You Freight"

MOTT'S NORTHERN-BRED ITALIAN QUEENS

that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans on "How to Introduce Queens and Increase," 25 cents. List free.

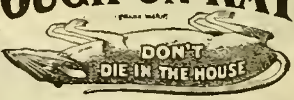
E. E. MOTT, Glenwood, Mich.

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

Biggle Bee Book.—This is a very small cloth-bound, well gotten up book. Its size is 4x5½ inches, and it was designed to be carried in the pocket of the amateur beekeeper. It contains concise information regarding the best practice in bee culture. Price, by mail, 50 cents, or with the American Bee Journal one year, $1.35.

"Always Does the Work and Does It Right"

ROUGH ON RATS



Unbeatable Exterminator of Rats, Mice & Bugs
Used the World Over. Used by U. S. Government
It Can't Fail—It's All Exterminator
Stop Fattening Rats, Mice & Bugs!
On your food or on Catch Penny ready-to-use substitutes—whose bulk is inert flour and grease
Why Trap Rats & Mice, One By One,
while Those Uncaught rapidly increase!!!
END THEM ALL TO-NIGHT WITH a 25c box of **ROUGH ON RATS**
The Recognized Standard For Half a Century
At Drug & Country Stores

MARSHFIELD GOODS

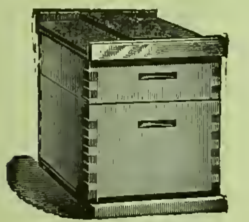
BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin



EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

ECONOMY ECONOMY TO YOURSELF
ECONOMY TO YOUR BEES

Are two essential points gained by using

Dittmer Process Comb Foundation

Because it is the same TASTE, and the same SMELL, and the same FIRMNESS, as the COMB the Honey-bees make themselves. It is the more acceptable to them because it is not like their OWN COMB.

Remember, Mr. Beekeeper, that to you HONEY IS MONEY—then use

Dittmer Process Comb Foundation

Work for a full-capacity honey crop

Send for Samples—All Supplies at Prices you Appreciate

GUS DITTMER COMPANY, Augusta, Wisconsin

PORTER
BEE ESCAPE
PATENTED

PORTER BEE ESCAPE SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
R, & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1.00 each; doz. $9.00. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

"Signed Lumber is Safe Lumber."

It's a pretty good idea (now that the lumber mills in the Southern Cypress Manufacturers' Association are IDENTIFYING EVERY CYPRESS BOARD THEY SAW) to MENTION TO YOUR LUMBER DEALER, CONTRACTOR or CARPENTER—and to ASK YOUR ARCHITECT to SPECIFY—that YOUR CYPRESS MUST BE

"TIDEWATER" CYPRESS IDENTIFIED BY THIS TRADE-MARK
Stamped in the End of Every Piece or APPLIED TO EVERY BUNDLE

S C M A
No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS."

Let our All-ROUND HELPS DEPARTMENT help YOU *MORE*
Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association
1251 Hibernia Bank Bldg., New Orleans, La., or 1251 Heard Nat'l Bank Bldg., Jacksonville, Fla.

INSIST ON TRADE-MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, LET US KNOW

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

FORTY CENTS CASH
FOR YOUR

BEESWAX

On account of the tremendous demand for

DADANT'S FOUNDATION

We must have a great deal of beeswax quickly. Your beeswax will bring you 40 cents in cash and 42 cents in trade if shipped to us AT ONCE. Do not delay.

ADVANCE ON FOUNDATION

On account of the scarcity and high price of beeswax we are compelled to advance prices of foundation 10 cents over the printed 1917 lists. At this price you cannot afford to use anything but the famous DADANT make of FOUNDATION. It is always perfect, and there is no loss.

Send us your beeswax, old combs and cappings now, while they are worth top-notch prices.

DADANT & SONS,
HAMILTON, ILLINOIS.

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gricultural
College

AMERICAN BEE JOURNAL

JULY, 1917

"When we receive your Honey
Return mail brings your Money"
The Fred W. Muth Co.

GET SERVICE LIKE THIS MAN

LAKE CITY, MICH., MAY 5th, 1917.

FRIEND MUTH:—Your letter with check for $146 20 for wax has been received. Thanks. I do believe you beat them all when it comes to quick returns for goods shipped you. I may have some more wax to sell after we get our cappings melted.

Yours truly, [SIGNED] ELMER HUTCHINSON.

We Want Immediately! Extracted Honey

We buy all grades of Extracted Honey. Large or small lots. Send sample and price. If price is right, we will buy. Parties who have Fancy and Number One Comb Honey write us at once. We will buy from 40 to 50 carloads this season.

BEESWAX

Send us your Beeswax. We pay highest market prices, and send you our check the same day shipment is received.

OLD COMBS

Make some spare money from the wax rendered from your old comb. We will render it, charging only 5 cents per pound for rendering, and pay you best market prices for the wax rendered.

Shipping Cases for Comb Honey

We are prepared to ship you the same day order is received any number of shipping cases. Several carloads are here now ready for buyers. Send your order in now before our supply is exhausted. We sell Lewis Beeware.

REMEMBER We remit the same day your shipment arrives. Read the letter above and be convinced that this is the house to send your shipments to. Try us.

THE FRED W. MUTH CO.
"The house the bees built"
204 Walnut St., Cincinnati, Ohio

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in June and July at the following prices, viz.:

FROM PENN, MISS.

Prices 1 and over	1	6	12	25 to 100
Untested	$ .85	$4 50	$8.00	$ .65 each
Warranted	1.10	5.00	9.50	.75 "
Tested	1.50	7 50	13.50	1.05 "
Breeders	3.00 to $10.00 each.			

FROM TORONTO, ONTARIO.

1	6	12	25 to 100
$1 00	$4 80	$ 9 25	$ .75 each
1.35	5.80	10.75	.85 "
1.75	7.80	14 75	1.15 "
3.00 to $10.00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

FROM PENN, MISS.

	1 to 5 each	6 to 25 each	over each
1-pound and Queen	$2.25	$2.00	$1.90
2-pound and Queen	3.00	2 75	2.65

FROM TORONTO, ONTARIO

1 to 5 each	6 to 25 each	50 over each
$3 00	$2.75	$2.65
4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO, ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us.

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

BEES

If you are thinking of buying bees this spring, we would be pleased to hear from you. We furnish full and nucleus colonies, bees by the pound, and queens.

A strong colony of Italian bees with a tested Italian queen, in a new 8-frame dovetail hive, complete with super, for $11.00. Tested Italian queens, $1.50. Untested, $1.10.

Our catalog of bee supplies, honey jars, and everything a beekeeper uses, mailed upon request.

I. J. STRINGHAM
105 Park Place, New York
Home Apiary: Glen Cove, L. I.

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association
1424 Market Street, Denver, Colo.

SELECT ITALIAN BEES

by the pound. Nuclei QUEENS. 1917 prices on request. Write,

J. B. HOLLOPETER, Rockton, Pa.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 2c stamp at once for prospectus.
SINCLAIR, Box 244, D 41, Los Angeles, Cal.

BEE-SUPPLIES

Let Us Figure With You

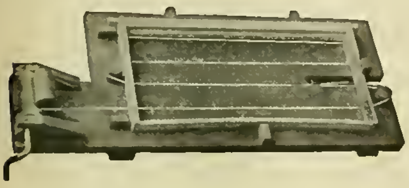
We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois



PATENTED
WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world, They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

BOOK YOUR ORDERS NOW!

One-pound package, $1 40 each; 25 for $32 50; 100 for $125. Two-pound packages, $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3 25 each. No queens. Untested queens, Italian or Carniolan, $1 00 each, or $10 per dozen; 100 for $70 A big lot of fine tested queens cheap. Write for prices. Prices on bees and queens in large lots quoted on application.

WM. ATCHLEY, Mathis, Texas
The Texas Bee and Honey Man

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa

3-BANDED ITALIANS

From May 1 until June 1

Untested, $1 00; 6, $4.50; 12, $8.00. Tested, $1.25; 6, $5 50; 12, $10.50

From June 1 until Nov. 1

Untested, 75c; 6, $4.00; 12, $7.50. Tested, $1.00; 6, $5.00; 12, $9.00. Select tested $2.00 each. Circular free.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

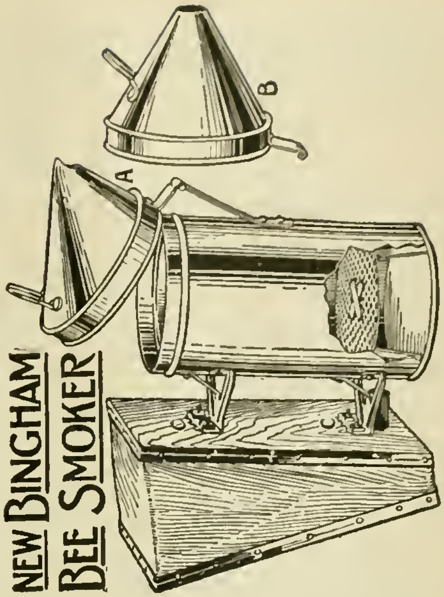
NEW BINGHAM BEE SMOKER

In 1878 the original direct draft bee smoker was invented and patented by Mr. T. F. Bingham, of Michigan. Mr. Bingham manufactured the Bingham Smoker and Bingham Honey Knife for nearly thirty-five years, and in 1912 becoming a very old man, we purchased this business and joined it to our established business of beekeepers' supplies and general beeware. Those who knew Mr. Bingham will join us in saying that he was one of the finest of men, and it gives us much pleasure to help perpetuate his name in the beekeeping industry.

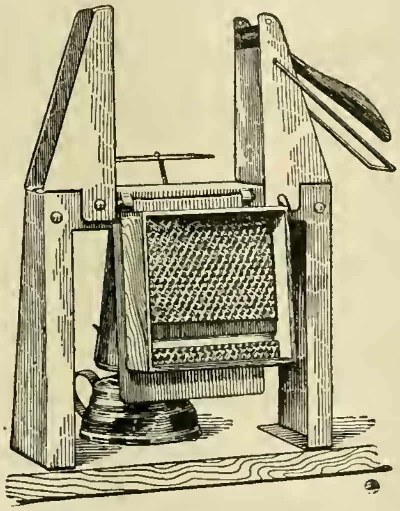
Bingham Smokers have been improved from time to time, are now the finest on the market, and for nearly forty years have been the standard in this and many foreign countries. For sale by all dealers in bee supplies or direct from the manufacturers

Smoke Engine, 4 inch stove....	28 oz	$1 25
Doctor, 3½ inch stove...........	26 oz.	85
Two larger sizes in copper extra		
Conqueror, 3-inch stove.........	23 oz.	.75
Little Wonder, 2½-inch stove..	16 oz.	.50

Hinged cover on the two larger sizes, postage extra.



A. G. WOODMAN CO., Grand Rapids, Michigan



WOODMAN'S SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. ONE OF THE GREAT ADVANTAGES this machine has over all others on the market, in the putting in of top and bottom starters is, YOU ALWAYS HANDLE LARGE PIECES OF FOUNDATION. You know how hard it is to set small narrow pieces for bottom starters. With this machine a large piece of foundation is set and the hot plate is again used to cut it off, leaving the narrow bottom starter. What is left of the large piece is then set for the top starter.

Price of machine, $2 50; with lamp, $2 75. Weight, 5 lbs.; postage extra.

Another advantage is the section always comes away from the machine right side up with the top starter, large piece, hanging down, and does not become loosened in reversing as with other machines.

A. G. WOODMAN CO.,
Grand Rapids, Michigan

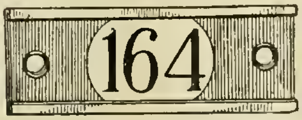
TIN HONEY PACKAGES

Do not wait longer, but secure your honey packages at once. The tin plate situation is becoming more serious from day to day. Freight traffic is slow and uncertain. We placed our order for tin plate for our 1918 Bee Smoker Trade some time before a state of war was declared. We dared not wait longer, for fear we could not secure it at all. Our three year contract on tin honey packages is still being honored, and runs until Jan. 1, 1919. We are saving money for carload buyers and others of smaller lots. Send us a list of your requirements. Do not delay. Act at once.

Friction Top Tins

	2 lb. Cans.	2½ lb. Cans.	3 lb. Cans.	5 lb. Pails.	10 lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. Woodman Co., Grand Rapids, Mich.



Colored Bee Hive Markers

PRICES—12 for 20c; 24 for 40c; 50 for 75c; 100 for $1 25. Large quantities, write us. Made in many colors. Furnishes means for a better control of the bees. Sample and catalog free.

Arthur P. Spiller, Box H, Beverly, Mass.

Miller's Strain Italian Queens

By return mail, northern bred from my best superior breeders. In full colonies; for business; three banded; gentle; hustlers; winter well; not inclined to swarm; roll honey in. Unt., $1 00; 6 for $5 00; 12 for $9.00 Sel. unt., $1.25; 6 for $6.00; 12 for 11. Virgins 1 to 3 days old at 50c each at senders risk. Safe arrival and satisfaction guaranteed in United States and Canada. Specialist of 20 yrs. experience.

ISAAC F. MILLER, Brookville, Rt. 2, Pa.

THE GUARANTEE THAT MADE "falcon"
Bee Supplies Possible

The "falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

NOTICE

HONEY **WANTED** **HONEY**

Do not forget when your crop of honey is ready for sale to send us a sample, state your lowest price, and also how it is put up. We are in the market for unlimited quantities, and will pay cash on arrival. Let us hear from you before selling your crop.

C. H. W. Weber & Company
2146 Central Ave., - Cincinnati, Ohio

Tennessee-Bred Queens

45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13 50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	9.00	$ .75	$ 4.00	$ .75
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1 25	6.50	12.00	1.00	5.00	9 00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15 00
Select Tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1.50; 2 fr., $2.15; 3 fr., $2 75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year
Select queen tested for breeding, $5.00
The very best queen tested for breeding, $10.00

JOHN M. DAVIS, SPRING HILL, TENN.

3-BAND ITALIAN QUEENS
Produce Workers

That fill the super quick with honey nice and thick. They have won a world wide reputation for honey gathering, hardiness and gentleness. Untested, 40c; 6, $2.25; 12, $4 00. Tested, 75c; 6, $4.00; 12 $7 50 We guararantee safe arrival and satisfaction.

S. D. CHEATHAM & CO.
Rt. 4,-Greenville, Ala.
The apiaries for queens of dependable quality

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill.

GOLDEN ITALIAN QUEENS

Read a few reports of big yields from single colonies of this gentle strain of Goldens: H. E. Bartz, Keytesville Mo., 264 pounds of extracted honey; J. M. Buchanan, Franklin, Tenn, 250 pounds of extracted honey; L. C. McCarty Nampa, Idaho, 250 pounds of comb honey; Fred Dury, Unionville, Mo., 374 pounds of comb and extracted honey.

I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—*Prices of Queens*—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested - - -	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested - - -	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested - - - -	2.50	13.50	25.00	2.00	10.60	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested - - - -	3 00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

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15 LBS. SURPLUS *Which Colony Is Yours, Mr. Beekeeper?* **150 LBS. SURPLUS**

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Louis H. Scholl (one of the largest beekeepers of the Southwest) says: "Three-band Italians have proven the best all-round purpose bee after trying out nearly every race, not only in an experimental way while still at A. M. College, but in our own apiaries as well."—(*In Beekeepers' Item.*)

	1	6	12		1	6	12
Untested............$	50	$ 3 00	$ 6 00	Tested..............	$1.50	$ 8 75	$17.00
Select untested......	.75	4 25	8.00				

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	1	6	12
Untested..................................	50c each.		
Select untested............................	.75	4 25	8.00
Tested.....................................	1.25	7.00	13.00
Select tested..............................	2.00	11.00	20.00

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Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25.

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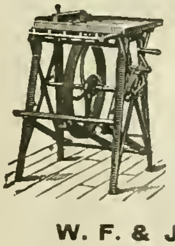
BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it."

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GOLDEN ITALIANS

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 7 HAMILTON, ILL., JULY, 1917, MONTHLY, 1.00 A YEAR

BEES IN COMBLESS PACKAGES

Notes on the Pound Package Business as Seen by Frank C. Pellett on a Visit to the Southern Shippers

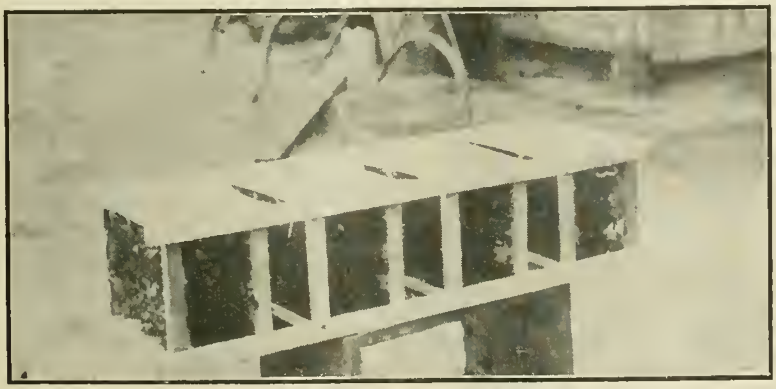
THE readers of the American Bee Journal have manifested so much interest in the possibilities of the combless package that it seemed advisable to find out just what the shippers are doing. Accordingly, when word came from the office to pack my grip and see what I could find of interest in the South, I went prepared for several weeks' stay and several thousand miles of travel. Most of the combless packages are shipped from Georgia, Alabama, Mississippi and Texas. Texas is so far removed from the other States mentioned that it did not seem advisable to include that State with the others mentioned.

The trip outlined included visits to as many of the queen-breeders and package men as it was possible to reach in the month of time available. From Chicago the trip was made South by way of Cincinnati with stops in Kentucky, Tennessee, Georgia and Florida. The return was made through Georgia, Alabama, Mississippi and western Tennessee. It is not the intention to give a consecutive account of the trip, but rather to answer the queries of our readers as far as possible concerning the package business and other matters relating to the South. A later article will deal with the possibilities of commercial honey production with notes on the sources of honey in different localities.

The shipment of bees in combless packages is about the latest development of importance in commercial beekeeping. It is so new that extensive beekeepers have hesitated to order bees in quantity for fear of failure. Most of the orders have been for from one to half a dozen packages even from the most experienced beekeepers. So successful have these shipments been that this year, for the first time, large orders are the rule and single orders require from a dozen packages to more than a hundred. The possibilities of shipping bees in packages are just beginning to be realized.

All the package men visited were being snowed under with orders before the season of shipment arrived. I left home early in March, and was, accordingly, a little early for the purpose for which I went, although all were preparing for the opening of the season at the time of my visit. The indications are that the package business will develop very rapidly and that the demand will exceed the supply for several years to come.

Much more capital is necessary to handle a package business successfully than is needed for a queen business or a honey business. The season is comparatively short, and unless the shipper has a large number of colonies to draw



POUND PACKAGES AS THEY ARE CRATED FOR SHIPMENT. NO DANGER OF SUFFOCATION FOR LACK OF VENTILATION

A. B. MARCHANT, UNION SPRINGS, ALA.

from the business will not be successful. M. C. Berry, of Hayneville, Ala., began operations with 900 colonies this season, and had about reached the limit of his capacity to fill orders by the time he was ready to send out the first shipments. At that, new orders were coming in every mail. The beekeeper who undertakes the package business with only a limited supply of bees to draw from is quite likely to be disappointed with results, and many will fail. The pound package shipper should first be a queen-breeder, since he can hardly depend upon buying queens in sufficient numbers to fill orders. Most orders are for bees with queens. So many packages shipped without queens are lost in transit, that some shippers are considering accepting such orders at the buyers risk only. My attention was called to the difference in behavior of the bees in packages with queens and those without them. The queenless bees were restless and kept up a continual buzzing which indicated that they would hardly arrive at their destination in good condition. The bees with queens clustered quietly and apparently were little disturbed by their confinement.

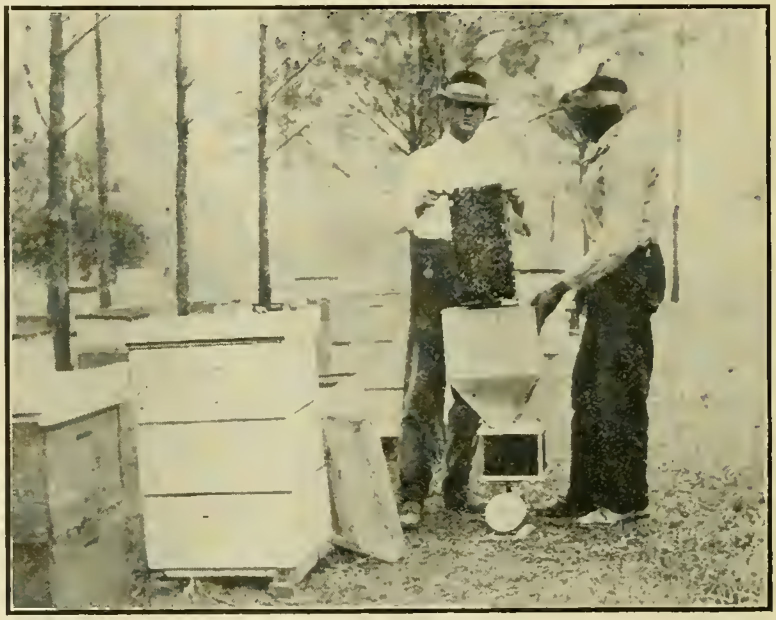
On my visit to Canada last June, I found some of the extensive producers considering the question of extracting all their honey in the fall and buying bees from the South the following spring, instead of wintering the large number of bees which is necessary for their extensive operations. They figured that it requires at least $4 00 worth of honey to carry each colony through. For the same cost, they buy a 3 pound package with queen in the spring and eliminate the winter losses. A few were experimenting in a small way with this idea in mind, but I did not find any one who had definitely decided that it would pay.

This plan is not at present possible on any general scale because of the fact that no sufficient source of supply is available. It is now a demonstrated fact that it is as cheap to buy bees in packages and place them on combs in spring, as to make late increase to winter over. The beekeeper who plans to make heavy increase will find it advisable to get as many combs drawn as possible during his honey harvest for the purpose of having them ready, and then buy the bees the following spring. The shippers guarantee the safe delivery of the packages, so that there is little risk to the buyer.

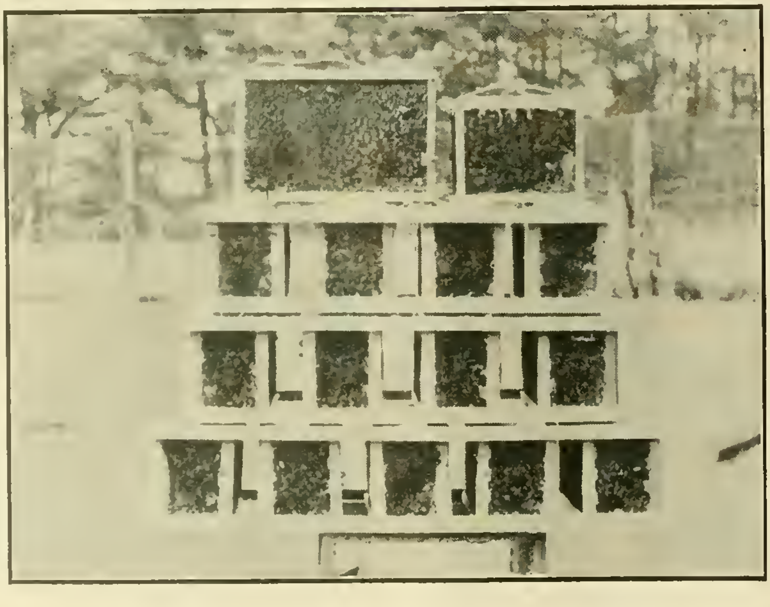
Even in Iowa I figure that it costs me as much in stores to winter my bees, as package bees would cost, without the risk of winter losses. While I would hesitate to destroy colonies already on hand rather than provide the necessary honey for wintering, I can see no particular advantage in making my own increase in quantity, especially in a good season. It is only fair to state, however, that this conclusion has been reached from the experiences of men in the North who have bought bees in packages rather than from actual personal trial.

The shippers visited were J. E. Marchant Bee & Honey Company of Columbus, Ga., A. B. Marchant, of Marchant Bros., of Union Springs, Ala., W. D. Achord, of Fitzpatrick, Ala., M. C. Berry, of Hayneville, Ala, and J. D. Smith, of the Penn Company of Penn, Miss. It was raining most of the time of my visit at Columbus, and the pictures taken there were disappointing. Photographs of the men mentioned are shown herewith. All the firms above named are well equipped for business, although all alike were somewhat nervous about the rainy backward spring, and felt anxious about being able to make deliveries as early as purchasers desired. If the weather has been as unfavorable elsewhere as it has in this part of Iowa since my return, the purchasers will suffer no particular inconvenience because of a little delay.

Some shippers have their colonies from which orders are to be filled about three stories high. Queen excluders are over the brood-chambers, and no bees are taken from below the excluder. The packages are filled in the middle of the day when the old bees are in the field, so mostly young bees go into the packages. This insures the safe arrival of the package under favorable conditions, and also that there will be no dwindling before there is time to rear brood. At the same time it insures that no colony will be unduly reduced, so that when the package season is over, all colonies will be strong enough to store some honey from the late flows.



M. C. BERRY AND COLORED ASSISTANT FILLING POUND PACKAGES AT AN OUTYARD



THE FIRST SHIPMENT OF THE SEASON FROM HAYNEVILLE, ALA.

The great difficulty with beekeeping in the South is the fact that because of the mild climate brood-rearing continues throughout most of the year. Thus, enormous stores are consumed and there is much difficulty in the control of swarming in some localities. Where the main flow is late in the season, it is thus easily possible to control early swarming by removing the surplus bees to fill packages, and at the same time keep the colonies strong enough for

J. E. Marchant, of Columbus, Ga.

the flow when it comes. The combination of packages with honey production insures a safe and satisfactory income.

The package business on a large scale will hardly prove practical except in the South, since most of the orders are for deliveries in April and May. It would be extremely difficult in the northern States to induce bees to breed up to a point where such orders could be filled at a time when there was a demand. The South then will continue to be the source of bees in combless packages. Because of the long breeding season and the mild winters, this branch of the business of beekeeping can be expected to become increasingly popular in southern States.

The package business has not, as yet, passed beyond the experimental stage in some respects. There is no standard cage, each breeder having his own ideas about cage construction. Some shippers feed from the end of the cage and some from the top. Top feeding would seem to conform more nearly to the habits of the bees in clustering below their stores. As nearly as I have been able to gather from the reports at hand, there is a smaller percentage of losses in transit where the bees are fed from the top of the cage rather than from the end.

It is important that there be a sufficient amount of candy, and that it be of exactly the right consistency. Candy that is too soft runs and musses things up, while if the candy is too hard the bees will die for lack of food. The novice should be very careful to fully inform himself in regard to making suitable candy before attempting to ship bees for any distance in packages. There have been numerous losses from unsuitable candy.

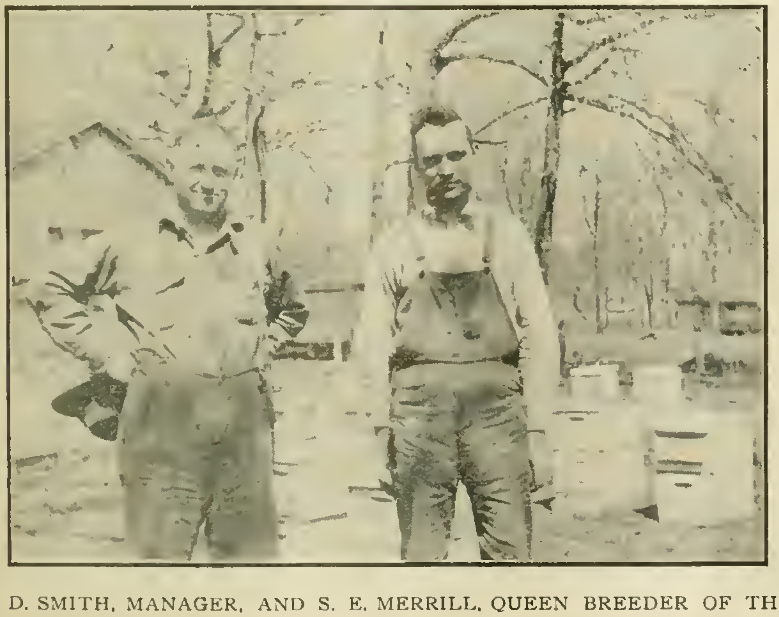
The shipper must exercise care in crating the packages in such a way that it is impossible for careless express messengers to smother the bees by piling other packages over them. The illustration shows how four packages are fastened together by means of strips. Two or three inches of space between the packages insures a liberal supply of air. The other picture of packages, is simply the first day's business from the Berry apiaries piled up ready to go to the express office. A few days later all the shippers were sending out packages in large numbers.

The picture of Mr. Berry will give a good idea of the way in which the packages are filled. The empty cage is placed on a small scale so that the weight can be readily noted. The large tin funnel slides the bees into the package the easiest way. The slip is so easy that they never seem to know what is happening until the job is done and the hole closed. The feed for the journey is placed in the cage before the bees are put in.

W. D. Achord and His Assistants, H. C Short and Felix Brown

It is hardly within the scope of this article to narrate the incidents of the visits to the various apiaries, but we take this opportunity to present to our readers pictures of several of the more extensive package shippers, taken right in the bee yards. These mens' names are all well known to our readers, because of their advertising. All are enlarging their equipment to prepare for increased business in the future for the package business has come to stay. New names will appear from time to time, and men who are well known as queen-breeders or honey producers, can be expected to launch into the package business also. Apparently the business of beekeeping is yet in its infancy, and we may expect to see greater development in the next 25 years than the old timers have seen in a life time.

Atlantic, Iowa.



J. D. SMITH, MANAGER, AND S. E. MERRILL, QUEEN BREEDER OF THE PENN CO., PENN, MISS.

IN SPITE OF POOR CARE

This spring I have had occasion to examine a lot of bees which have received little attention for several years past. In spite of the winter which resulted in heavy losses, many colonies in hives which were so rotten that they would not bear lifting contain very strong colonies. It is a little surprising that a colony will come through such a winter in a hive with the bottom rotted out and with cracks an inch or more in diameter in the corners. Some of the covers even were loose and had cracks as wide as a hive-tool. When bees under such conditions come through the winter in as good condition as those which were carefully packed in winter cases and given all the coddling that a fussy beekeeper knows how to bestow it makes one think that we have not yet learned all about wintering. Probably it is only the vigorous colonies that survive at all under such conditions. However, we fail to see how the advocates of sealed covers and no upward ventilation can reconcile such cases with their arguments.

F. C. P.

AMERICAN BEE JOURNAL
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA

PUBLISHED MONTHLY AT
1st Nat'l Bank Bldg., Hamilton, Illinois

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Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Wood and Paper Containers for Honey

The paper container for granulated honey which was recommended some years ago in the bee magazines, but which did not seem to suit either the honey-producers or the public, is again mentioned in the press as a substitute for glass or tin vessels which are now scarce and high in price. Gleanings recommends the "Aikin bag," a waxed-paper product, in sizes of 1 to 10 pounds. Mr. F. W. L. Sladen, Dominion Apiarist of Canada, recommends a paraffin-coated bag of 2 pounds capacity, measuring inside 2½ inches x 3, and 5⅜ inches high. This is supplied in flat at a low price per thousand. It is opened by means of a block, as shown in the engraving.

Barrels are also recommended for shipping honey in bulk. We have used barrels for over 40 years, when harvesting the crop at our outapiaries and would use nothing else. We find them the handiest container and the cheapest until we are ready to put up the honey in small packages of different sizes according to the retail trade demands. The only container which we can compare with barrels is a honey tank. But honey tanks are not convenient to haul to or from the outapiaries, either full or empty, while the barrels may be loaded up and taken away at once.

Not all barrels will do. Years ago, Thos. G. Newman, then editor of the American Bee Journal, recommended and kept for sale cheap wood-bound barrels. We tried them but they were a failure in our hands. Unless barrels can hold the honey without leaking, they are not to be used.

The only barrels that we find satisfactory are second-hand alcohol barrels, bought and kept in a dry place after they have been emptied of the alcohol. Druggists and patent medicine manufacturers can usually supply them.

Whisky barrels will not do, for they have usually been charred in the making. They are preferred for whisky because they give it color, we are told. But these barrels spoil the appearance of the honey by filling it with moats of charcoal which are very difficult to remove. We learned this at our expense, years ago. Alcohol barrels are coated inside with a very light coat of glue, which fills the pores of the wood and the crevices and makes them absolutely tight, unless they have been kept in a damp place or have been used for other purposes. This makes them superior to any whisky barrels for honey. Good barrels having contained syrup or rock candy are sometimes acceptable for honey.

A barrel which has been used to hold water will not do. Neither will a barrel do which has been rinsed with hot water. It will be sure to leak when it dries, and the honey will help dry it. Before using it the hoops of the barrel should be driven as tightly as possible.

Barrels that are not glue-coated inside may be coated with beeswax or paraffin. This coating makes an ideal container. But it is somewhat difficult to do this right, for the wax, when poured in, may cool too fast and cake itself inside, in such lumps as to work loose from the wood. The barrel and the wax must both be very hot. Putting the barrel for a few hours beforehand in the sunshine of a hot July day will help. A good way also is to mix a small quantity of pure lard of best quality with the wax or the paraffin, when melting it. The lard causes the wax to stick better to the walls of the barrel, and if only a small quantity is used and it is free from taint, it will not give any odor or flavor. Pour the hot wax in the warmed up barrel, bung it, and roll it about for a few seconds. Then pour out the surplus. It is astonishing how little will be required if the work is done properly.

The advantage of barrels is that you can draw out your honey and put it up for retail when ready, or you can ship it to the wholesaler, with much less trouble than if the honey has been put up in 60 pound cans. In our experience there is less leakage with sound barrels than with cans. We have often known of a 60 pound can emptying itself in transit, because the case in which it was boxed became unnailed at the bottom and one of the nails was driven through the tin in handling. Such an accident is not to be feared with barrels if the bunghole is securely closed.

Of course if you have no outapiaries, you may put your crop in one or more large tanks and draw from these. But if you let the honey granulate in the tank, it is a rather difficult job to remove it without scratching the tin, which will cause rust the following years. To remove granulated honey from barrels it is of course necessary to take out the head. This may be done with very little trouble and without injuring the barrel in the least. We will give a description of the method we use in our next number.

Helping Increase the Crop

The Government of the United States is taking more and more interest in the production of large crops. Those of our beekeepers who desire it can secure information on beekeeping and good advice by writing to Dr. E. F. Phillips, Apiarist, Bureau of Entomology, Washington. Special pains are taken to help the business of honey production as well as the sales of honey.

Bee Magazines

A friend calls our attention to the fact that, in mentioning the magazines of which we have complete files, we did not mention the British Bee Journal. He wishes to know whether we do not consider it worthy. Yes, it is. The British Bee Journal is, we believe, the only weekly bee magazine in the whole world at present, and it is as regular in its publication as ever, in spite of war conditions.

The only reason why we do not have a full set of this magazine is that we have received it regularly for only about 30 years. It is now in its 45th year.

In our June number will be found a biography of Edward Bertrand, taken almost verbatim from the columns of the British Bee Journal. This is sufficient evidence that we appreciate the magazine in question. Moreover, it is edited by our old, experienced and learned friend, Thos. W. Cowan, thoroughly seconded by its junior editor, W. Herrod Hempsall.

Shortage of Glass Containers

The conference of apiarists which met in Washington on April 23 and 24, appointed a committee to investigate the possible shortages of honey containers. To many people this matter might seem of very little importance. Yet when we think of the scarcity of many articles of common usage, we wonder what may cause it.

The committee have made a very interesting report. We cannot give it in full. But it may be of value to our readers to know why glass honey jars are so difficult to secure.

Soda-ash is difficult to obtain on account of its use in munition factories and on account of car shortage. Sand deliveries are also delayed owing to car shortage. Factory hands and especially skilled men have gone to munitions factories. Enlistment is also reducing the help.

Both tin can and glass container manufacturers have been urged to give the preference in orders to containers for food products and in many cases they have agreed to do so. So it is hoped that a sufficient quantity of both glass and tin containers may be supplied in time for the crop.

Quebec Beekeeping

We acknowledge receipt of a copy of the "Methode de Cultiver les Abeilles dans la Province de Quebec," by Hector Beland and Cyrille Vaillancourt, published and distributed by the Minister of Agriculture of the Province of Quebec. It is a bulletin of 68 pages giving the most modern instructions on beekeeping and we commend it to Quebec beekeepers.

Happy

"Happy" the life of a bee, by Walter F. McCaleb, published by Harpers, is a short idyll purporting to describe the feelings of a worker-bee from its birth through a life of usefulness. It is quite interesting although of but little practical value.

Parthenogenesis and Sex Determination

Several French bee magazines have lately published a contribution which boldly condemns the discoveries of Dzierzon, Berlepsch, Siebold, Langstroth, etc., and calls their teachings obsolete. It holds that sex in bees is determined by the workers, that the queen lays only one kind of eggs, all fecundated when passing by the spermatheca, and that the workers change the sex of the eggs which they wish to rear as drones.

The writer of this article gives a method of verification of his theory which he has evidently not tried himself. He recommends the inserting of a comb of worker-brood and eggs from a colony of golden Italians into a queenless colony of pure black bees. He asserts that drones will be produced from some of that worker-brood and that their color will show that they are pure Italians. Our friends across the ocean who are inclined to believe him had better try this experiment, for it has been performed over and over again in this country and is conclusive. They will then easily convince themselves that the whole thing is a fake. Worker-bees can no more change the sex of eggs than we can.

Secretary Redfield Urges Use of Fiber Containers

"Plans for lessening the use of tin cans for products nonperishable, thus releasing large quantities of tin for use in the manufacture of cans as containers for seasonable foodstuffs, have about been completed," Secretary Redfield of the Department of Commerce announces.

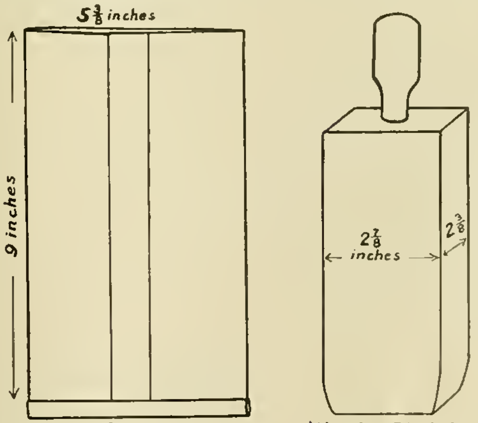
"If the public will cooperate, there will undoubtedly be sufficient supply of tin cans to care for the perishable crops for the summer. To this highly necessary condition the individual may assist by accepting goods in fiber or paper instead of tin whenever there is no deterioration in the change. It is exceedingly important that there be tin to preserve the summer vegetables and fruit for use next winter. The housewife who helps us provide that supply by lessening her own demand for tin-packed goods, is undoubtedly 'doing her bit' in a patriotic manner.

"The Bureau of Foreign and Domestic Commerce and the Bureau of Standards of this department, in conjunction with the Department of Agriculture have been working on this problem—and it is a serious one. The result of the joint efforts is a recommendation that many products formerly packed in tin, be packed in the new fiber containers, which are cheaper, are sanitary, and easily disposed of by burning or otherwise.

"Some of the products which it has been suggested may be successfully packed in fiber are: Coffee, tea, tobacco, soap powders, cleaners, shoe and metal polish, soaps and shaving preparations, talcum powders, alum baking powders, spices, condiments, raisins, prunes, and various drugs and chemicals.

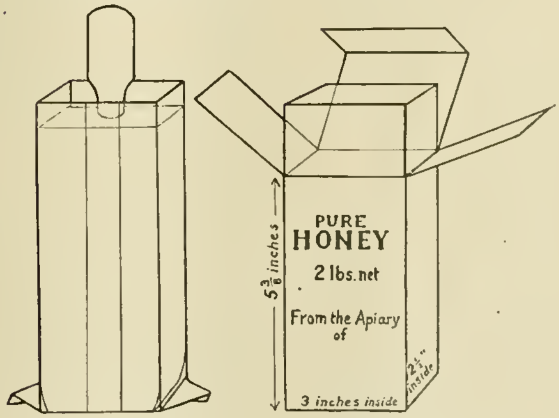
Our Cover Page

J. E. Hull, of Maxwell, Iowa, with his pet swarm, is shown on our front cover. This may seem a remarkable feat to our inexperienced subscribers, but nevertheless it is easily done.



Waxed Paper Bag in the flat.

Wooden Block for opening out Bag



Bag opened by Block.

Bag placed in folding Card Box, ready to receive Honey.

WAXED PAPER CONTAINERS FOR HONEY

The Work of the Bee Division of the Dominion Experimental Farms

BY F. W. L. SLADEN, APIARIST, DOMINION EXPERIMENTAL FARMS

[Continued from page 201.]

IT is convenient for the purpose of studying honey production in Canada to consider three principal regions. 1. The Eastern, extending from the Atlantic Coast to Winnipeg; 2. The Middle West, extending from Winnipeg across the prairie, and including the dry belt of British Columbia; 3. The Pacific Coast, typified by the Lower Mainland. These regions grade into one another and can be subdivided into a number of more or less definite areas.

The Eastern region, extending from the Atlantic Coast to Winnipeg, has usually sufficient rain, heat and air humidity to make it a good beekeeping country, and nearly all those who make beekeeping their principal or sole occupation are located in this region. The principal crops of honey are three. 1. Clover, alsike and white, extending from mid June to mid July or the end of July. 2. Fireweed, from early July to the end of August. 3. Goldenrods and aster from early or mid August to mid September. Locally in southern Ontario and southwestern Quebec there is basswood during clover bloom, and buckwheat in August. It must not be supposed that the whole of this vast region is a good beekeeping country. The greater part of it is thickly wooded, and there are large rocky areas where very little honey can be obtained.

Alsike and white clover are found principally in the farming country, and seem to reach their best in Ontario south of the Ottawa river. The lake region here steadies the temperature, and maintains humidity. At the same time, this being a southern interior section, heat and fine weather seldom fail, and a clover honey crop of about 100 pounds of extracted honey per colony, spring count, may be expected in the better districts where the management is good. Other noted districts for clover honey are the St. Lawrence Valley, where the flow is somewhat shorter than in Ontario and the St. John River Valley. Prince Edward Island gives a steady and late yield, and the farming districts of Nova Scotia are productive, but here the clover plants are sometimes extensively killed by repeated freezing and thawing when the ground is bare in winter and early spring, and too cold and wet weather for much honey production is encountered in some seasons. White clover is very productive around Winnipeg where, however, it occasionally suffers severely from drouth, and alsike and white clover are of value in the northern Ontario dry belt and in the river valleys in northwestern Quebec.

Fireweed is found in partly cleared lands that are not yet in cultivation, especially in rich moist places where timber is decaying, in places recently devastated by fire and in the clay belt or northern Ontario. It needs fine warm weather to secrete well. It is more valuable than clover in the northern part of the Gatineau Valley, and probably at least of equal value in the New Ontario clay belt between North Bay and Cochrane, and in the swamp lands around and to the east of Molson, Manitoba. Its merits lie in its long season of yield lasting from early July to the end of August, this being the best part of the season, coming two or three weeks later than clover so that the bees have plenty of time to build up, and in the white color and mild flavor of the honey. Averages of about 100 pounds per colony, spring count, appear to have been obtained from this plant during the past seven years in a large apiary at Montcerf, in the Upper Gatineau valley.

Goldenrods and asters are important in certain sections. The different species vary very much in honey-producing value, the nature of the land determining the presence and abundance of certain species. In the wet lands of Charlotte Co., N. B, especially in the Honeydale district, they constitute the principal source of nectar, and they are valuable generally as a source of surplus in the coastal districts of New Brunswick and Nova Scotia, especially in the region of Bathurst, N. B., Moncton, N. B., and Amherst, N. S., also in certain places in the Upper Gatineau Valley and in eastern Manitoba. Probably an average of from 50 to 80 pounds of honey per colony can be gotten from them in places where the best species abound. The honey is usually of good quality and varies in different districts from white to golden. The honey gathered in marshy districts is usually bright golden. The wax is yellow even when the honey is white. The flavor is more or less pronounced, but sometimes very fine, a sample of honey obtained from Honeydale, N. B., having an exquisite flavor and aroma. We may recognize three types of locations for goldenrod and aster which, however, often overlap.

1. Open swamp or bog, the principal plants here are *Solidage uliginosa*, a tall goldenrod of cylindrical inflorescence; *S. rugosa*, a species with spreading inflorescence; *Aster umbetlatus*, a tall white-flowered species with a large flat inflorescence, and *Aster puniceus*, a tall and handsome species with hairy stem, clasping leaves and large blue flowers. *S. uliginosa* and *Aster umbellatus* commence to flower early in August. *S. rugosa* and *Aster puniceus* remain in bloom until mid September, so there is a month or five weeks of possible honey flow. The swamp or bog type of location is largely independent of rain during the honey flow, but needs fine weather and moderate warmth.

2. Sandy or gravelly barrens or plains locations in which blueberry is frequently abundant. Here we get *S. puberula*, and in the interior the highly productive *S. squarrosa*, and also asters of the cordifolius group. The honey from these species is gathered very late, during the last week in August and first two weeks in September. Good rains in early August followed by fine and moderately warm weather during the flow are needed to get the best results. The color of the honey produced in a location of this kind at an out-apiary that I established at Kazubazua, Quebec, is nearly white and of a very pleasant flavor.

3. A restricted area with its center in Cumberland Co., N. S, in which *Solidago graminifolia* is a troublesome weed of cultivation. At Amherst in this district the honey gathered in August and September is unwholesome for wintering, and the unwholesome honey is possibly the product of this plant. The common goldenrods of the roadsides and waste places in the farming lands of old Ontario are not heavy producers of honey under ordinary conditions.

Goldenrods and asters come into flower earlier in the North than in the South and on the coast.

[To be concluded]

Fighting Foulbrood

BY F. DUNDAS TODD.

AS I have frequently indicated, we in British Columbia make no pretence of curing foulbrood, we simply wipe out the colony and hive by fire. So far as I know this Province is the only region in the world that is pursuing the policy of total extermination. It may, therefore, be worth while to compile a tabular statement of infected apiaries to see if we cannot draw some practical conclusions therefrom.

Infected apiaries 1914, 1915, 1916, Vancouver District.

	1914		1915		1916	
Essondale	Total	aff.	Total	aff.	Total	aff.
Mental hospt.	11	5	11	0	7	1
Chilliwack						
A	14	3	14	1	7	0
B	5	2	4	0	0	0
Vancouver						
C	1	1	0	0	0	0
D	12	2	10	1	21	4
E	15	1	11	0	7	0
F	5	1	4	0	0	0
G	15	1	12	3	7	0
H	6	3	3	0	0	0
I	3	2	1	0	1	0
K	30	4	21	5	14	1
L	2	0	2	1	1	1
M	12	6	4	4	0	0
N	1	1	0	0	0	0
O	2	1	1	0	1	0
P	13	1	8	2	2	0
Q	3	1	1	0	0	0
R	2	1	1	1	0	0
S	12	5	7	0	5	0
T	8	4	4	0	4	0
U	7	1	6	0	5	0
V	2	1 (sup)	2	1	0	0
W	15	0	30	2	30	1
X	4	1 (sup)	4	1	3	0
AA					9	1
BB					3	1
Sardis						
Y			9	7	4	2
Z			10	10	0	0

Notes on above table.

Mental hospital. Foulbrood first discovered here. Bees were bought from A.

A, original apiary affected in Chilliwack through purchase of old hives in Vancouver. Colonies all strong. B's apiary is one-half mile west of A. Just a few affected cells. Prevailing winds were from the east all spring.

N's apiary originally contained a dozen colonies, but had dwindled to one. It was close to Flynn's apiary, which seems to be the point of origin of all the diseases in this part of Vancouver. On Flynn's death his apiary was dispersed. G, H, and K buying hives. I bought from H.

C, D, and E are near each other, but fully two and a half miles from the center of infection. E had had bees for some years, the others had just started. C bought from D.

O, P, and Q live close together. The last named bought an old hive from somebody, cannot say who, and probably introduced the disease into his locality.

F had the infection brought to him by D in a new hive-body that had been used for a weak swarm for three weeks.

K bought 12 colonies of Flynn apiary. L adjoins K.

M bought six old hives from N, invested in half a dozen queens and started nuclei. Result, his apiary was entirely wiped out in two years.

R bought a single colony from somebody unknown who left town.

S loves bees, but thought his district was worthless for honey production, so he provided them with a home. He had hives and boxes stacked up like cordwood, three deep. From him I could not get any definite information, but he was just one mile from the center of infection. I found here the worst case I ever saw, every frame solid with dead brood and only a few bees alive, yet in the next two seasons the colonies that remained seemed to be perfectly healthy.

X bought from a man who left town. I learned that W had got part of the same apiary, and on proceeding to his place I found the disease far advanced in two out of his three purchases. The story of the hive is rather interesting. It was of the Gallup pattern, and when bought did not contain a single cell of brood or honey. W thought the conditions propitious for transferring to a regular hive so he shook the bees on to a set of his own combs and rendered the old ones into wax. Remember, he was not shaking for foulbrood, he was merely transferring to a standard hive. When I called on him a year later he felt confident the colony was clear of the disease, but I found one affected cell.

V was a beginner; he had bought a colony from some one leaving town.

Y and Z are located about two miles from the A apiary. How the disease got to them I could not trace, but A deals in supplies. The Z apiary is managed by a lady who disobeyed most of the elementary rules of good beekeeping. She would persist in feeding back most of the season's crop in the open air. Y ran her apiary in 1914, using some of his own extracting supers, taking them home to be cleaned up. The owner would not permit him to examine the brood-nests. Holding a demonstration at Y's apiary in the spring of 1915, I was horrified to find nearly every colony in awful condition, as the year before the apiary was in fine shape. Everybody present at once cried out "The bee inspector brought the disease the year before." Luckily I was able to show by my notebook that I had had no contact with foulbrood until 14 days after my previous demonstration. Some folks give bee inspectors lots of blame and mighty little credit, if any.

D in 1915 bought a lot of bees in boxes from a man in the bush, and transferred them to regular hives. Most of his cases in 1916 were of this lot, so I started into the wilds to locate the seller, who is designated as AA in the table. I found he had kept bees for many years, but in 1914 he had got a colony that had come from the apiary of I.

BB bought a colony from G in 1913. Knowing its history I examined it twice in 1914, once in 1915, always finding it in good condition. In the spring of 1916 it had shrunk to a handful of bees, with disease in three combs.

The winter of 1915-16 was the most severe known to the oldest white inhabitants of British Columbia and wiped out at least 40 percent of the bees in the Province. Stores were drawn upon to the last cell, hence any dormant germs were given an opportunity to get in their deadly work.

Out of my whole experience I think I can draw a few definite conclusions.

1. It is not proven that the infection can be carried by queens, although at one time I was rather suspicious.

2. Free movement of hives in ordinary commerce is a quick and common way of spreading the disease.

3. Feeding back honey in the open air is very efficient for disseminating the germs of foulbrood.

4. It is a rather risky investment to buy up old hives and combs, yet I found one man who had invested $600 in an apiary buying a couple of empty hives in a foulbrood district, even after I had warned him about the region. I burned them on the spot.

5. Disease germs will lurk in a hive for some time before affecting the brood. One of our inspectors had a case develop three years after the colonies had entered the Province, having come from a foulbrood region in Oregon. The case of BB mentioned above seems to confirm this.

6. A new hive in contact with a weak swarm for only three weeks can carry the germs and develop the disease when used for another and strong swarm.

7. Using the most drastic measures we cannot expect to stamp out foulbrood in less than three seasons. In Vancouver I found 38 affected colonies in 1914, 21 in 1915, 9 in 1916; at Essondale 5 in 1914, 0 in 1915, and 1 in 1916; at Chilliwack 5 in 1914, 1 in 1915, 0 in 1916. All the new cases were very mild, just a few affected cells, so I am in hopes to soon have a clean bill of health.

8. The bee inspectors must not trust to the average beekeeper finding the disease in his own apiary; only four times in six seasons have I been called to examine suspicious cases. In two instances I found foulbrood, in the other two the brown pollen was the cause of the worry.

9. The foul smell said to be so characteristic of American foulbrood is not always present; in fact, I have never yet had a chance to become acquainted with it. Whenever I have found a case of the disease I have tried to get together as many of my people as possible, so that they might become familiar with its appearance. Several times I have had surrounding me as many as a score of both sexes, and even when the case was a very bad one all failed to detect any disagreeable odor.

I think it is Cowan who says that another germ must be present to produce the smell, and that the non-smelling type of American foulbrood is not nearly so virulent as the stinking variety. The type in Vancouver has been there for at least four years, and if my Chilliwack informant was correct it has been present for nearly a score, yet with apiaries rather closely clustered I found comparatively few cases in proportion to the number of colonies examined, say three percent these being in 12 percent of the apiaries. The percentage of apiaries looks rather high, but the proportion is due to the scattering of the disease by sales from affected apiaries. With the educational movement started in 1911, beekeeping in British Columbia is expanding rapidly, the Department list of beekeepers now containing a total of about 1500 names.

Victoria, B. C.

Apiary of Sprott & Schow, Burnaby Lake, B. C., 40 colonies produced 3500 pounds of extracted honey in 1916

A Beemoth Parasite

BY FRANK ROJINA.

During the month of August, 1916, several combs in our apiary were destroyed by moths. I laid some of these moth-infected frames aside for demonstration work and put them into one hive in the steam-heated storage room. The hive was covered with a bee-escape board. In December I noticed on the window pane behind this hive a large number of small flies (see the picture). I was wondering where they came from. During this investigation I opened the hive with moth frames and found the hive ful, of these little flies, the frames covered with webs and the larvæ all dead.

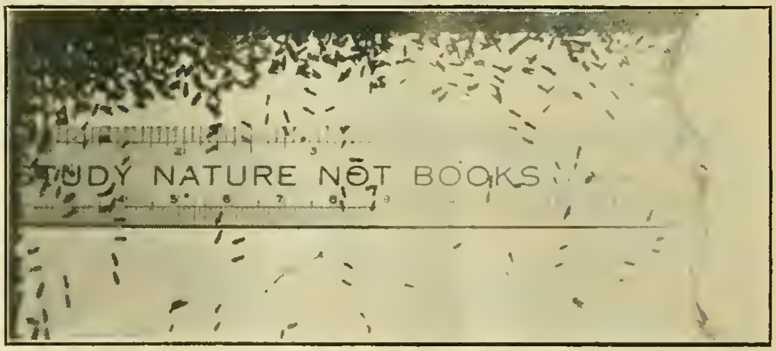
I put one of the dead larvæ under the microscope and found on it many nests of tiny oblong pupæ near the legs of the larva. Investigating the refuse on the bottom of the hive, the flies seemed to be hatching and flying up whilst I looked. I then began to look through the mating nuclei which contained frames from last summer's queen-rearing, and found that a few of them which showed traces of the beemoth also had a number of these flies present with larvæ all dead.

This fly belonging to the family of Hymenoptera, probably *Dibrachys clisiocampæ* is a parasite which lays its eggs in the larva or pupa of the beemoth, which after hatching feed on the larva and kill it.

In daytime these flies like the sunshine and come out on the windows by thousands. At night they return to the hives where small holes permit them to enter and lay their eggs.

The thought occurred to me that this matter might be investigated and these flies bred for distribution among beekeepers who are troubled with moths, as a means of destroying this pest.

University Farm, St. Paul, Minn.



SMALL HYMENOPTERA THAT FEED UPON THE LARVÆ OF THE BEE-MOTH—(See the contribution by Mr. Rojina)

Value of Sugar as Food for Bees

BY PH. J. BALDENSPERGER.

THE following article from the pen of our old friend Ph. J. Baldensperger, will interest our readers, concerning both the value of sugar as bee-food in times of dearth and the experience of a veteran in handling hundreds of colonies of bees in Syria and the Holy Land, a country similar in its honey resources to our arid southwestern States. Mr. Baldensperger who speaks and writes several languages fluently, is now located in southern France, at Nice.

On page 88, March, 1917, the question about "Cane *vs.* Beet Sugar" is discussed. This question has interested me in so far as I have been feeding sugar in years of dearth or simply as stimulative food for the past 37 years. When we began modern beekeeping in 1880, we had very nearly 30 years of experience with bees, in the old fashion, but then only did we begin to work really with bees in the frame hive. Jerusalem is a dry place, indeed; the old Canaanite name Jebus, is very similar to Yabes, the modern Arabic for dry or hard. When we really started, we went headlong into the business, and as beginners, did not wait for the right moment, which would best suit the bees, but we seized on the moment when it seized us. Our first expense was sugar. We made hives with old boards, as D. A. Jones, of Beeton, Canada, then in Jerusalem, showed us, and fed the bees as the same gentleman fed his bees to carry them with him to America.

In those days the hogshead of sugar was just disappearing, and was replaced by loaf sugar and sugar dust of the consistency of earth and small pebbles. Sugar was then taken with a spoon, the pebbles and sugar dust used in the coffee or tea. The sugar sacks sold then, weighed about 180 pounds each, and the Arabic shepherd called an Attal, carried such a sack on his back from the shop inside the walls, to our school-house on Triori outside the walls, a little over a mile distant. Cars, wheelbarrows and the like were absolutely unknown; there were donkies to carry heavy loads; but I think the shopkeepers who paid a strong man about a beshlik a day, which corresponds to about ten American cents, found human labor cheaper.

The sugar sack weighing about 180 pounds cost about 15 piasters the sottel, so the pound of sugar was worth about 10 cents. We did not know whether the sugar was *cane* or *beet;* all we knew was that it came from Marseilles. I began feeding the co'onies with sugar, simply, because sugar was the only sweet to be found, though we lived in the "land flowing with milk and honey." The *dibs* of the Arabs and *dabsh* of the Hebrews was made of grape syrup boiled to such a consistency as to hinder fermentation for half a year, that is from October to March. Honey was no current article in the Jerusalem market, and that is why we used sugar. Bees developed very well on this food. We had heard about artificial pollen, pea meal, flour, etc., and threw a little in or about the hives, but bees never troubled very much about this, and in all my later experience I used sugar, preferring it to honey, excepting when our own honey flow was so great that we found no ready market for it. Pollen was largely provided by nature everywhere when it was wanted.

When we began pastoral beekeeping, carrying the hives from Jerusalem to Jaffa, and *vice versa,* we usually fed the bees on large quantities of sugar, which often arrived at Jaffa after a tempestuous sea voyage, somewhat washed over by the salty waves. The merchants at that time offered us the damaged sugar at about half its usual price. The German shopbroker called it "Havari sugar," which we found later to be a corruption of the French "sucre avarié" (damaged sugar).

The orange blossoms suddenly burst into bloom about the beginning of April, and honey flowed in at the rate of 2 to 20 pounds a day per hive. We had to stimulate the bees, beginning the middle of February, as the climate of Jaffa is very moderate. The coldest day I registered in the eighties of the last century, was 6 degrees C. (43 degrees F.) in the early morning on a January day. There were a few almond trees in blossom, but they did not give sufficient honey to stimulate brood-rearing worth while. Pollen was to be had on daisies and the like. A German beekeeper living in the German colony north of Jaffa, often complained of this lack of flowers just before the enormous honey flow, and his bees were never ready in time, as he disliked to feed or shrunk before the expense.

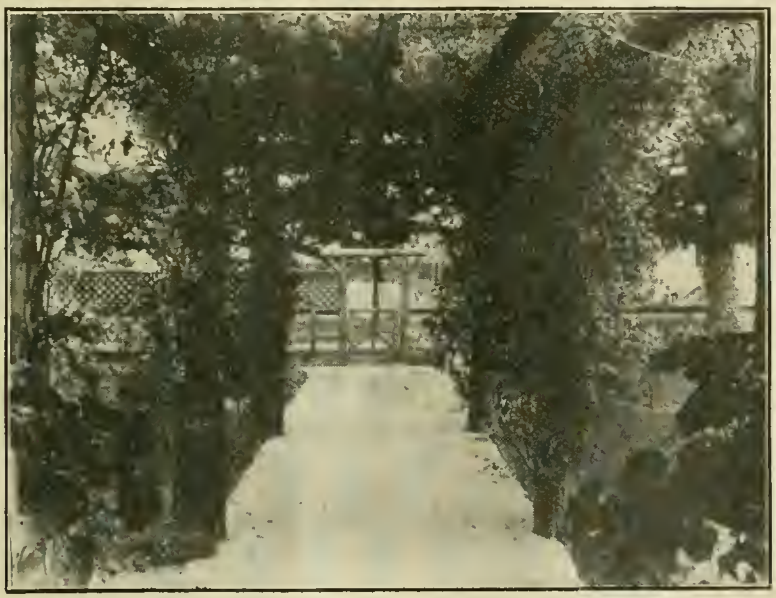
We usually fed the bees every evening from about Feb. 25 to March 25, or even to the beginning of April, pouring the prepared syrup into each hive, either by the flying hole or from the top. It took us hours to pour in the feed to several hundred hives daily. We were generally two at the same hive, one to handle the syrup, the other to smoke the bees. We began with not over one-sixth of a pound the first day, and for a week at the same rate, then increasing the portion until we reached a pound or more daily, as the colony showed progress. I have been told that sugar degenerated the bees, was a cause of foulbrood, and other nonsense, but I have continued feeding in time of need here in the Alps of southern France as well.

Well-fed bees, provided they had a vigorous mother and workers enough to pull the colony through five or six weeks of dearth to the doors of abundance, always largely paid for the expenses, and were as fierce as any beekeeper can imagine. As far as degenerence goes, the result of such degenerate bees by sugar feeding was an income of anything between 50 and 180 pounds per hive, with an average of about 120 pounds or over. The number of hives were often between 400 and 500. I heard a maitre in apiculture of our region criticize my observations because he thought I worked with one-half dozen hives on Sunday afternoons only, as he himself practiced his apiculture. As for sugar infusing foulbrood or preparing bees to receive it, my long experience in Palestine has shown me that foulbrood never appeared simply because the bacilli were not present.

Again, it was objected that the sugar would contribute to adulterate the honey, but those who tried to hit at that did not reflect that food is given to the bees to stimulate them when there is not a drop to be found, and how could the syrup consumed, not stored, affect the honey? Just before the orange blossoms opened, the end of March, the colonies with 12 to 25 frames of brood, had not a drop of syrup, and they would have starved to death had not the orange blossoms been there.

As Jaffa was dry all summer, we carried the bees on camelback trains to the plain of Sharon and the mountains of of Judah, stopping two or three times, for a few weeks at a time, at the principal honey resources. Cactus flowers, agnus cactus, lavender, and finally thyme, grow in succession from May to September. Feeding was therefore only necessary in February and March at Jaffa, and we always wintered our bees on pure honey. Many years later we learned that English beekeepers preferred cane sugar, and explained the absolute superiority of this sugar in the columns of the British Bee Journal.

I have used sugar since I lived in France, for many years, and have never had occasion to test which kind is actually superior, simply I suppose because beet sugar is mostly produced in Europe, perhaps England excepted. France has its cane producing colonies which help it a little, but the greatest production is beet sugar all over our continent. When beet sugar fails in years of dearth, as in 1910–11, the smaller cane sugar productions of Cuba, etc., can not help to keep the prices at the general level in normal times.



WHERE MY NEIGHBOR TAKES THE MORNING AIR

Since the war our sugar factories have mostly been destroyed or in the hands of the enemy, being in the beet regions of northern France,and no wonder if we use cane sugar now. But we have just enough for human use, and the bees must wait until everything is in order again to receive their share, if they want any.

A few years ago I had a colony of bees in a shed right in the middle of the town of Nice, and as my bees were all at the mountains, I resolved to keep this one and feed it, if necessary, on sugar during the long and dry summer months. I gave the colony 13 frames containing only one-half starters.

From July 10 to Aug. 7, I fed them 23½ pounds of sugar, $2.20, In this interval the bees completed the 13 combs.

From Aug. 13 to Sept. 11, I fed them 28½ pounds, $2.85. They built eight complete combs.

August 14 I took away nine complete frames, of which four contained bees, which I put into nuclei to rear queens.

August 27 I took four frames of brood for nucleus. September 11 I took four frames for nucleus. From Sept. 17 to Oct. 8 I fed them 7 pounds of sugar, 60 cents worth. They again built six complete frames of comb.

September 23 I took again from the old stock two frames of brood, and on Sept. 27 five more frames of brood for the nuclei, and from Oct. 9 to 10, I fed them 1½ pounds of sugar, 15 cents.

October 13 I took again one frame of brood, and on the 19th three more frames. In all I fed 60½ pounds of sugar, or $5 80.

They went into winter quarters with three small colonies which had two frames built full without foundation, and all with worker-cells. There was not a flower extant, some very rare pollen, gathered from gardens. So much for my experience with sugar and its effect on bees.

Nice, France.

My Neighor's Garden

BY C. D. STUART.

BEES are no respectors of persons. When raiding the possessions of my neighbors for nectar, the rich and exclusive are visited with the same assurance as are the work-a day folk, and even more persistently, owing to the greater variety of flowers a special, high-priced gardener can produce over the few plants and shrubs a business man is able to keep alive by casual. after-office-hours sprinklings.

But the important consideration is not the familiar attitude assumed by my bees toward the neighbors, but the attitude my neighbors and I are able to maintain toward one another, despite the disturbing circumstance of my possessing live stock that can neither be cooped up, fenced in, tethered, nor hobbled.

And one particular neighbor is possessed by a fear of bees that even his abiding faith in the protection of the All-Wise can neither overcome nor allay. Not even his best friends can explain this fear. He is obsessed by it. He once had presented to him a hive of gentle Italian bees. They had never stung him, yet he could not be induced to approach them—not even to replace the hive cover that had blown off during a rain storm. The timely visit of a friend saved the colony from a watery grave, and the bees were immediately handed over to the rescuer by a grateful and greatly relieved owner as an appreciation of heroism.

My neighbor's garden is under the care of an expert, whose sole duty apparently is to provide pasturage for our bees, since he cultivates honey-producing flora to a greater extent than any other gardener within bee-range. My neighbor's home is on a beautiful eminence. My bees are situated in an out-apiary in the gulch just below, where they can mount, unburdened, and volplane back with their cargoes. As the season advanced, I became aware of the unhappy mental condition of my neighbor. No matter in what section of his garden he chose to take the morning air, my bees were there to welcome him; if he would sprinkle the lawn or water the shrubbery, there were the bees clustered on hose and faucet; or, if he would inhale the fragrance of the filbert bloom—a low tree that in February puts out catkins similar to those of the pussy willow—a startled bee would graze the tip of his nose.

Nor was the nuisance, like the gnat or the mosquito, confined to any particular season. My neighbor's shrubs and plants, which numbered into the thousands, had been gathered from all lands and climes, for the sole purpose of proving, to those of Missouri extraction, that anything will grow in California; and at all seasons, barring unfavorable weather, my bees, in true cosmopolitan fashion, were up and at my neighbor's nectar, both foreign and domestic — the wistaria from Japan, Americanized to "wisteria"; the catalpa from the East Indies; and the algaroba, which, although a native of the Mediterranean region, came to my neighbor's enclosure from Oahu, one of the Hawaiian Islands, a seed from a Paris garden having been planted there years ago by Father Batchelot, and which has developed into the same tree known in certain portions of our country as mesquite.

But even that is not all. If my neighbor essayed to reduce his waist line, by a turn at tennis, a bee would fly at him from each of the Cherokee roses that interlace the wire enclosing the court; or, in his daily pacing to and fro beneath the pergola, the humming of the bees gathering pollen from the passion vine blossoms overhead would disturb his lofty solitude; or, in the hammock, swinging just inside a hedge of cytisus proliferis, or Canary Island broom, a honey tree of great value, Lethe could neither be wooed nor won; and the rustic chair beneath the oak from whose glossy leaves my bees garner the honeydew, now appeals in vain to its erstwhile occupant. And what diabolical fancy could it be that caused the gardener to plant a locust tree at one entrance, and a New Zealand red gum, an equally attractive bee food, at the other? No doubt the carpenter bee, a black zeppelin-like creature, was the original cause of my bees falling into such disfavor, for so avidly did the wild creatures work on the locust bloom that my Italians were completely outnumbered, and the daily encounters of the two species only terrified my neighbor the more.

But we were unable to help him. He refused to learn bee language and govern himself thereby. For example, when the bees dart from flower to flower with loud impatient buzzings, one acquainted with the bee vocabulary would know that they fly away empty handed or, more properly speaking, with empty stomachs, to the hive again. Under those circumstances it is well to be on guard, especially when they come straight at you, with ears laid back and teeth showing, as though you were to blame for their disappointment. It is then that inconspicuousness is the better part of valor.

A WISTERIA TRIMMED OUTHOUSE

On the other hand, when the sun is coaxing the nectar from the hearts of the flowers, the bees are too busy for quarreling. They come whizzing past, full of business and honey, with an important get-out-of-the-way-quick humming, at once joyous and commanding, that no one dreams of questioning. All they ask is the undisputed right-of-way back to the hive-stands. But my neighbor does not seem to get their point of view. He takes the position which, if put in words, would be, "These are my premises. I got here first. I'm established. You can't drive me away!" and proceeds to prove his rights by dashing through the pergola to the house, coat tails straightening in his flight, and madly fanning the air with a tall silk hat, which exposes a spot at once vulnerable and convenient for attack. Naturally any bee with a sense of humor would give chase; and ours are jolly bees.

MY APIARY IN THE GULCH BELOW

If only my neighbor understood the psychology of these funny little people! If only I might be allowed to explain matters to him! But that is impossible. I never see him. Of late, the chauffeur drives him down the gulch road, whereupon he alights and ascends a winding stairway cut in the steep hillside and, protected from my bees by wildwoods, enters his home by a rear door, and barricades himself.

Queen Introduction

BY C. D. CHENEY.

THE recent review of queen introducing methods by Dr. Miller suggests an observation or two upon the two principles of present day methods. If all the methods named or known are analyzed, it will be found that by any method the bees' attention is either *diverted* or *distracted*, and success depends upon how thoroughly this is accomplished.

We can estimate the ethics of the case only by comparing the effect upon the bees with our own emotions under similar conditions. When a salesman approaches a prospective customer he endeavors to be as agreeable, cheerful and sociable as can be in order to put his customer into the best humor possible for receiving what he has to offer. He watches carefully, and introduces his business only when he feels that his customer has been favorably impressed and is in the right humor to accept his proposition. This may be termed the "diversion" method of introducing—business, and is universally practiced. Can any one describe, or imagine, a distractive method which would stand a ghost of a chance?

Adhering to our comparison, why should the accepted human method be entirely ignored and reversed when we essay to deal with our bees which are infinitely more sensitive to external impressions?

This may be taken as an argument in favor of "diversion" methods for introducing queens, for which I think no apology is needed.

May I be permitted to add as my firm belief that the "Sousin" method, everything considered, is the best of the diversion methods.

New Jersey.

The Different Races

BY E. F. ATWATER.

WHEN we first located in Idaho, some 16 years ago, the bees for many miles in every direction were as pure Italians as can be found with very few exceptions, and this in spite of the fact that no attention had ever been paid to keeping them true to type. Certainly there had been no reversion to the black type, as often claimed by eastern beekeepers when the race is not constantly kept up by careful selection. No doubt such reversion in other localities is due to the presence of black drones in wild colonies, unsuspected by the beekeeper.

With a locality stocked with so good a race, no doubt some would question the wisdom of making any experiments with other races, but as our nights are cool, springs often rather unfavorable and altitude about 2700 feet, we began cautiously testing other races in 1903 and today, our 1000 colonies are nearly all of more or less Carniolan blood, which we have never regretted.

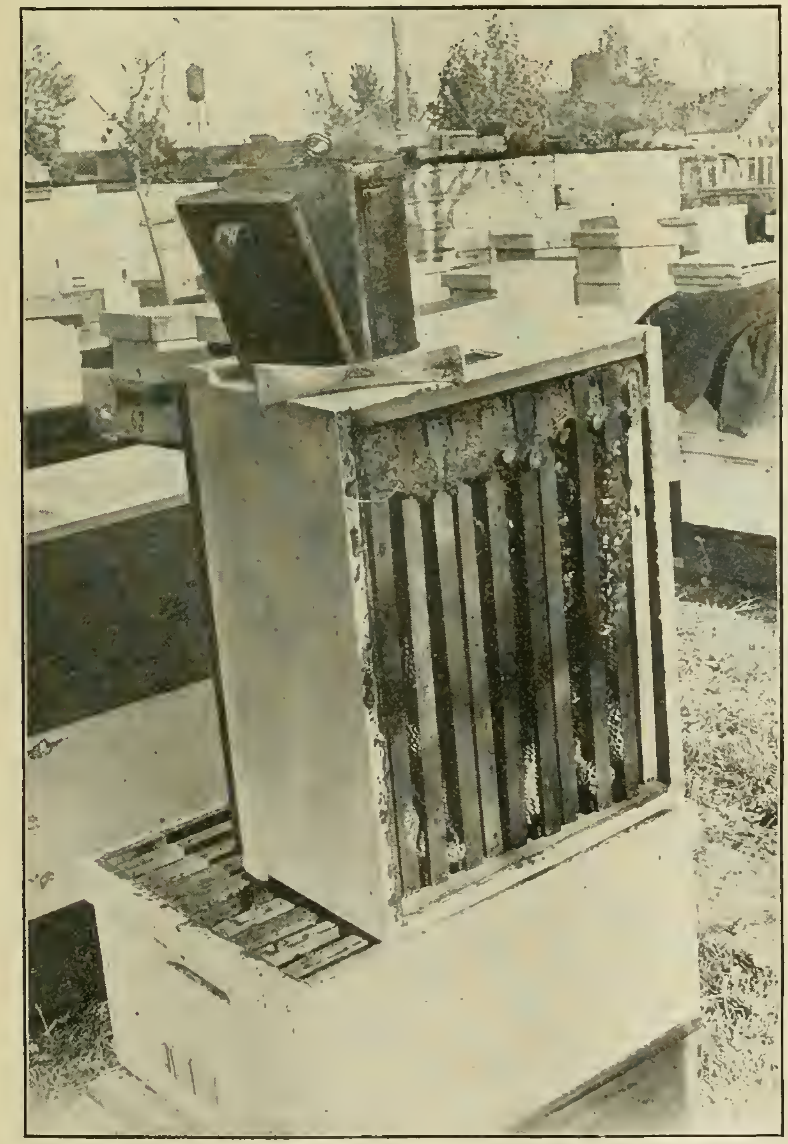
In the meantime, other races and crosses have been tested. Some ten years ago we had a tested Cyprio-Carniolan queen from Mr. Frank Benton, which certainly gave a fine colony of industrious bees not excessively cross. From her we reared a number of daughters, all of which mated with Italian drones. Some of them, in their markings, showed no trace of Carniolan blood, and all were very good in every way except that about one in ten produced bees which were very irritable and difficult to handle. The liability of the Cyprian temper cropping out caused us to discontinue breeding them.

In 1905 we had a very fine tested Caucasian queen from the United States Government. The bees were wonderfully gentle, but died the first winter, as stores were not of good quality, and the young bees produced by stimulative feeding late in the fall (the season being one of failure) were apparently tender. At various times we have had Caucasian queens from other breeders, but none has produced bees which were very gentle. The Caucasians and their crosses have been equal in prolificness, hardiness and industry to any, and are among the best bees for this locality, but not so far as tested superior to Carniolans, while their habit of closing the space just inside the entrance with a huge wall or curtain of propolis every fall is against them, as it is no small task to remove it so that frame manipulations may be quickly made. In the cut the propolis defenses may be seen, not only attaching the corners of the frames to each other, but extending back two or three inches between the bottom bars of the frames and in places attached to both the end and bottom-board of the hive. The hive-body shown was the lower story of the colony, and the colony only one-half Caucasian blood.

Last, the least desirable of all races tested, the Banats. No bees ever tested have proved so inferior as storers. Only one of many Banat colonies ever made 100 pounds of comb honey, while many colonies of other races have far exceeded that amount. No bees ever bred up better or tried to swarm more, and as soon as a good flow begins they "plug" the brood-nest with honey worse than any Italian colony, and very effectually prevent the rearing of enough bees to gather a second flow.

We have found no trouble with the development of a so-called "mongrel" type of bees, and while some colonies are more excitable than others, yet practically all of perhaps every possible mixture and re-mixture of Carniolan and Italian blood have proved good as honey gatherers, hardy, prolific white cappers of comb honey, and little if any more liable to swarm than Italian colonies of like strength, and our locality is bad for swarming with any and all races, large hives or small even when producing extracted honey.

Meredian, Idaho.



CAUCASIANS ARE PROPOLIZERS
Notice how they have plastered the front end of the frames so as to contract the entrance

Ventilation of Hives

BY I. HOPKINS.

I WAS more than interested in the article by your Swiss correspondent, Mr. H. Spuehler, on "Economy of Heat in the Hive" in your December number, more especially that part of the second paragraph referring to the size of the entrance to the hives recommended by Mr. Kramer, as the result of seemingly exhaustive experiments.

For the first few years of my beekeeping career I was always troubled with moldy combs and soured food in the hives, with more or less diarrhea among the bees in early spring. The position of my apiary on a hillside was perfectly free from dampness, and the district itself did not register an abnormal rainfall, so that I began to think that moldy combs constituted a normal condition of bee-culture in frame hives. Subsequently, however, I thought that the need of better ventilation might have something to do with the question, as the practice then was to reduce the entrance to a very small opening in winter, while the bees at the same time blocked with propolis all means of upward ventilation. My friend, the late Rev. J. R. Madam, also, for similar reasons, became interested in the ventilation problem, and between us we concluded to carry out a series of experiments at my apiary.

Your correspondent suggests that Mr. Kramer, as far as he knew, was the first man to solve the question with thermometers 25 years ago. The first of our series of experiments which was conducted with the sole object of determining how to secure efficient ventilation of the hive, was commenced on Jan. 15, 1889 (see record in March number of the Australian Bee Journal, 1889), and continued through 13 series until April 10, 1889, all of which are recorded in the same Journal. This is exactly 28 years ago, three years before Mr. Kramer experimented. The greatest number of thermometers we used at one time I think was 17, and although we insulated them as far as possible from outside atmospheric influence, and endeavored to eliminate all errors so far as possible, we realized, as our final report indicated, that further investigation was needed before accepting the results of our experiments as final. They were conducted under different conditions, with porous mats over the frames, and the latter hermetically sealed to prevent the slightest upward ventilation, and with wide and contracted entrances.

There was one feature as the result of our investigation in which there could be no error, and that was, under all conditions, the indraft of fresh air and the expulsion of contaminated air was through the entrance, as absolutely proven in all our experiments by the difference in the temperature shown by two thermometers inserted within the hive, one at each side of the entrance. Since that time I have invariably kept a wide (large) entrance to hives containing normal colonies both in summer and winter, and never remember having a moldy comb, soured food, or bee diarrhea during the intervening period.

Other features in which there were few chances of mistake were, that in most cases the center of the hive was warmer than just beneath the mats, and frequently on the back part of the bottom-board the temperature was higher than in any other part of the hive. Mr. Kramer's conclusions regarding the advantages of a big entrance exactly fit ours.

Doctor Phillips' experiments as detailed in his Bulletin No. 93, are extremely interesting, but they have little or no practical application in this part of the world, where our bees are flying all the year around.

Auckland, New Zealand.

Five Minutes Among the Bees

BY R. L. RINCKWITZ.

"BEES!" I exclaimed, with perhaps unnecessary vehemence, as I sat up in bed, and "Where?" exclaimed my wife, in an alarmed manner.

"In the upper story at present—in the garret," I answered, peevishly I admit, since it always annoyed me to have my flights of inspiration misinterpreted by my practical wife. But again she misunderstood.

"I knew a woman once who read that money could be made with bees in an attic," she said, dubiously, however.

"No! No!" I told her. "I merely used a slang term; I meant bees in my bonnet, in the upper story of my gray matter. Practical men always keep their bees in an apiary."

"What kind of an ape—er—what did you call it?" Adelaide now wanted to know, "What do you know about bees, anyway?"

Feeling somewhat as if I had received a foul blow under the belt or between the joints of my armor, I nevertheless gathered the remnants of that self control, which is the pride of all male animals, and patiently explained, first waiting for the clock to finish striking twelve, though as I counted it seemed to continue to seventeen or eighteen. I also waited for three roosters to stop crowing, and explained that it was only a board falling over, due to wind in the woodshed, and not a burglar trying to carry off the big grinstone or the hundred pound keg of nails.

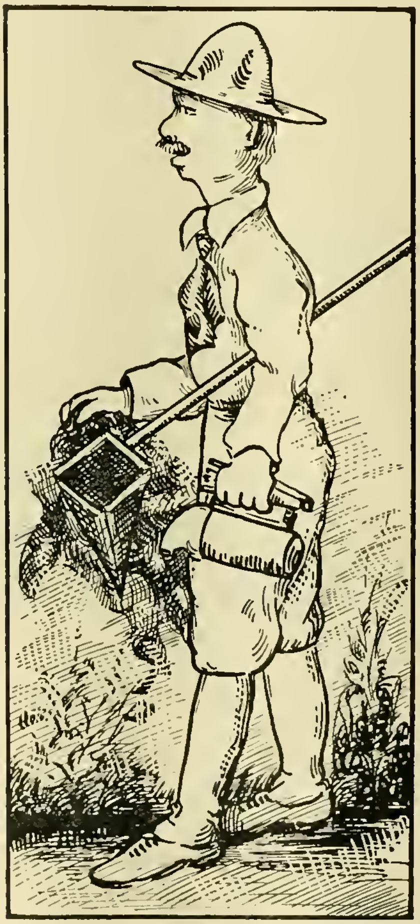
"What do I know about bees?" I questioned testily, possibly a trifle haughtily. "I have been reading bee journals ever since yesterday morning. What I don't know about bees certainly wasn't written in any book or magazine."

"A bee is an insect with a crustaceous formation, and armed with a business-like antenna at one end, and a sting at the other—the latter is seldom or never used, however," I added hastily, to forestall objections in that locality. "Much depends upon the end or direction in which you approach a bee."

"But do bees always advance with the front or harmless end toward the ape—what was it you called the beekeeper?"

"A-p-i-a-r-i-s t—Apiarist," I replied with a Job-like inflection. "Bees dwell in a hive in perfect peace and harmony, and without asking foolish questions, go about their duties of gathering propolis and nectar. They consist of a queen, drones, and workers; the latter are mostly imperfect females," I added maliciously.

Entirely ignoring my masterly attack, and with a cool exterior which I dreaded, since it generally heralded some base and underhanded sally—in the manner of advanced suffragism, when I least expected it, my wife now wanted to know, "What is a drone, and what are they good for?"



"With Smoker, Veil, and Swarm Basket I Went Gaily Forth to My Doom."

"What is a drone good for? You, with your education, still ask such a question?" I parleyed, to gain time. "Why drones—*drones* are good for feeding chickens. They—"

"Well, I am glad that they attend to *something—you* usually ask *me* to feed them." This from the wife of my bosom—but what can a man expect in this age of enlightened feminism.

"I mean they are sometimes fed to poultry when in the brood form, in the more tender years of their growth—; but time spent in the hive soon palls heavily upon them, and before they reach that mature stage of what with us is known as the voting age, in the flavor of their youth and innocence, they are literally worried to death by the females." (This was not just as I had read it, but I thought it would do, since it was so near the truth.)

"Yes, I shall surely get a bee—rather a pair of them," I went on hurriedly, to head off any more questions. "Come to think of it, I shall get several pairs, perhaps half a dozen couples." I hate a piker, always preferring to do the thing in style; but my wife views these reckless and expensive moods with alarm, and this was no exception.

"I should think one pair would do," she told me, severely, "until you learn to feed them and water them properly. Better yet, why not write to Mr. O. O. Poppleton, the man whom you so often wrote up in the Metropolis of the Florida Bee King. I am sure he would tell you all about it in one or two letters."

Oscar O. Poppleton, a real personage who carried out the scheme of moving bees by water successfully northward, so as to get the successive blooms, I had known well in Miami, Fla., one of the largest winter resorts in the United States, and south of Palm Beach.

His plan, which consisted of moving the hives by means of a large launch from key to key, sometimes from as far south as Cuba to the vicinity of Stuart, Fla., had been tried once by a syndicate on the Mississippi, where it failed, according to Mr. Poppleton, because the hives were left on the boat, a method said to have been employed with good results by the early Egyptians. In the former case the bees were lost in the water by the thousands, though some state that the constant dwindling of stock was due to lack of knowledge and good management.

To the Bee King, as I had termed him in innumerable write-ups, I accordingly wrote, for I certainly had acquired a "bee in my bonnet" since malaria drove me from the semi-tropics and newspaper work into the valleys and mountains. That there was money in bees I vaguely knew, from observation, though I scarcely hoped to emulate Poppleton's scheme and "do what I cannot accomplish", as the late Grover Cleveland once said to the former while on a fishing trip at Stuart—"make the busy insects work the year around."

The reply was a long one, but the following extract is the gist of it:

"— the questions you ask are the usual ones a beginner must have answered, but it is impossible for any one person to do this nearly as well as a good text book............A beginner in, say arithmetic, doesn't want to begin his studies with compound numbers instead of numeration, and on the same principle you want to begin your bee education by first getting grounded in the physiology of the bee. It would be an enormous task for me to do this..."

"The hives I use are not made or sold by any dealer; I have to make them myself and do not think it would be practical for you to make them—better use the dovetailed Langstroth style of hive sold by the dealers."

"Don't go into this or any other expert business too largely at first. Bees can be bought from any dealer. Don't start with more than from three to six hives, and increase in proportion as your knowledge increases......"

A neighbor informed me that bees can be bought by the pound, and advised getting none but fertile, tested queens. Many of my questions were answered by him, but those I forgot to ask were legion. What kind of hive to use? Vaguely I know that Poppleton's hive, as written up by the Roots years ago, was radical, being one story and long, like a carpenter's tool chest, to facilitate its removal to and from the launch, piling in tiers, and to obviate the building of "brace comb", as the odds and ends of comb built by the bees between the first story or brood-chamber, and super or second storage chamber, are known. And, most important of all—a question I learn which has troubled beginners since time began—how to get the bees into the hive and how to keep them there? Wild thoughts of using chloroform haunted me, pending the arrival of some text books I had sent for. I thought bees, dreamed bees, and had bees in my mind as I ate whatever was put before me.

"Please get me some bed ticking like the last," said my wife one day as I started for town, "three yards of it, a set of darning needles, and the groceries in this list............And don't let him give you common brown sugar this time—we are entirely out of it, and I must have the white!"

"Bed ticking, three yards, darning needles, and sugar, only the white," I unconsciously repeated between the perfunctory or choleric 'Get up, Dolly's!" and "What are you doing there's!" on the way in. What I got, by some subconscious trick of the mind, was insect powder, and fly paper. To the grocer I had said—I shudder yet as I think of it—

"I want three pounds of bees and a fertile queen. Give me nothing but the white, please—the last I got were brown, and I know I said white." What the man said didn't amount to much—it was what he *thought* and *looked*. But I came home in triumph with white sugar.

"Some day," I said to my wife in a burst of patronage and confidence, "I may write a book, "Three Years Among the Bees." Langstroth's hobby was ants for many years—it was only through seeing honey in the comb on a friend's table that he was led to purchase some bees and make a study of them. They all write about them—Dr. C. C. Miller "wrote 'A Year Among the Bees', Quinby wrote a book, Root wrote a book, Cook wrote a—"

"That's it, you forgot to get me that cook book I sent you over for yesterday", interjected my wife severely. Guiltily I thought of the bee book I had borrowed at the neighbor's instead, and said nothing.

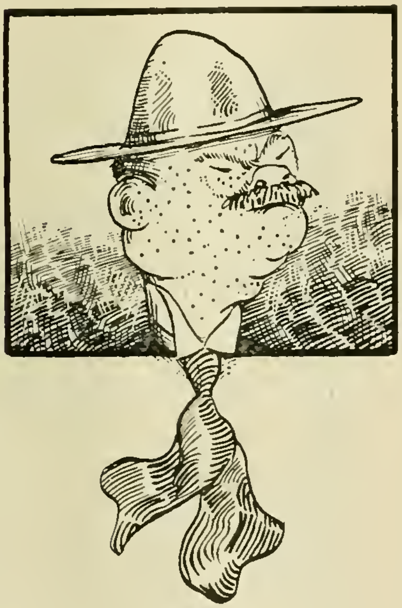
My first hive came at last. I had sent for one minus bees and plus the fixtures, smoker, etc., in order that I might study them better. Then came the day—it will retain its vernal freshness in my mind as long as I live—I remember it for the first thrill, and all the little and big thrills that came after.

"Mother says you know about bees", said a small boy at the kitchen door. "There's a bunch hanging on the wash line, and she says come and get them and you can have 'em."

"So already my reputation as a skilled apiarist has spread among the neighbors," I exulted, visions of that book to be written flitting as industriously through the nooks in my cranium as a bee flits from flower to flower.

With smoker in my left hand, swarm basket under an arm, bee veil in my right hand—and directions concealed in my pocket, I strode gaily forth to my doom.

"Don't let them sting you—aren't you afraid of them? Don't you use gloves? Are they glad to see you want to put them in a nice new hive? I believe they *are* glad—hear them hum!" were a few of the questions hurled at me.



"My Head is Larger than its Wont, so that Even the Dog Stares in Bristling Wonder."

"A beekeeper never uses gloves," I replied less gaily, perhaps with a trifle of weariness in my tone. "Bees are always full of honey when they swarm, and in that condition *never* sting!"

Who wrote that last phrase? Ordinary killing with a club, fists or poisonous gas would be too refined for him. Those bees *were* glad to see me. Perhaps they mistook the veil I wore for a crown, hence decided that I was the queen. To see the haste with which they forsook that plain hemp clothes line for me was flattering—at first. Did they merely desire to embrace me? Wildly, and with a sinking feeling clutching me about the pit of the stomach, I hoped so. Vain, hollow bauble is hope in this cruel world.

"Stung!" Literally and figuratively I was stung. Four quarts of fond, loving and affectionate bees fell, by some perverse process, into a fold of my bee-veil, inside of it, and refused to be dislodged from that haven. A pint of bees dropped into each sleeve; adventuresome and shameless hussies crawled up my pants leg, due to the sudden loosening of a refractory leggin, causing me to shed bitter tears of humiliation and outraged modesty.

Cheerfully would I have disrobed, there before Mrs. L's. kitchen, only the commiserating matron insisted on standing there, just back of the screen door, telling me just what to do. Vaguely, as one hears joyful picnickers in a passing boat, through the murmuring, roaring surf, while bathing, I heard neighbors, female neighbors, big ones, middling, frying sized girls in the giggling stage, wild-eyed youngsters in skirts, skirted tots, millions of omnipresent small boys. And not a knot hole big enough for me to crawl into.

The bees were enjoying themselves meanwhile—or did my antics annoy them? Some broke their stingers off in my skin, and seemed desirous of retrieving them. Others got them in, and in some way could not withdraw them, which caused a wild, twisting, boring motion, like a man having teeth all over his head and body, and all being filled at once, only much worse.

What happened in the next five minutes—Mrs. L. insists it was only five minutes, though to me it seems a long summer's day and an arctic night for good measure—I know not. Perhaps I hit my head mercifully against the cellar door (Mrs. L. says I fainted, but I know better).

When I came to I was in the L's cellar, my head on the soft side of a brick, and Mrs. L. was bending over me, with a greasy dish pan, empty, in her left hand. (The water it had held was mostly down my neck and over my clothes.) Her right hand was engaged in bathing my fevered and swollen brow with the dish rag, with what my wife, who unluckily chanced to come at that moment, insists was a caressing motion.

As a consequence, there is a coolness between my wife and Mrs. L., in spite of the hot weather, and they don't speak to each other. Possibly I might explain, but my lips are sealed—they are so swollen that I cannot speak to either. My head, also, is larger than its usual wont, resembling that of a rather distinguished ex-president to such an extent that even the dog stares in bristling wonder—as a consequence I proudly avert my head as I pass the neighbors, and fail to see them, for, owing to the swelling, I couldn't see any one if I tried.

Glendale, Ariz.

No. 6.—Seventy Years of Beekeeping

In our last issue we gave a list of the present periodical publications on bees in the United States. This list was prepared before the opening of the year. Since Jan. 1 another periodical has apppeared which is worthy of mention. It is entitled "The Beekeepers' Item," and is published at New Braunfels, Tex. The vast State of Texas has entirely different beekeeping conditions from the other States of the Union, and therefore needs a special periodical. This need has made itself felt so often that already at least three publications made the attempt without success. We hope the present publication may succeed.

The following is an incomplete list of the different bee periodicals which have been born in the United States in the past 50 years, and have been compelled to suspend their publication after one issue or more. Some have lasted over ten years. We possess at least one number of nearly every one of the following:

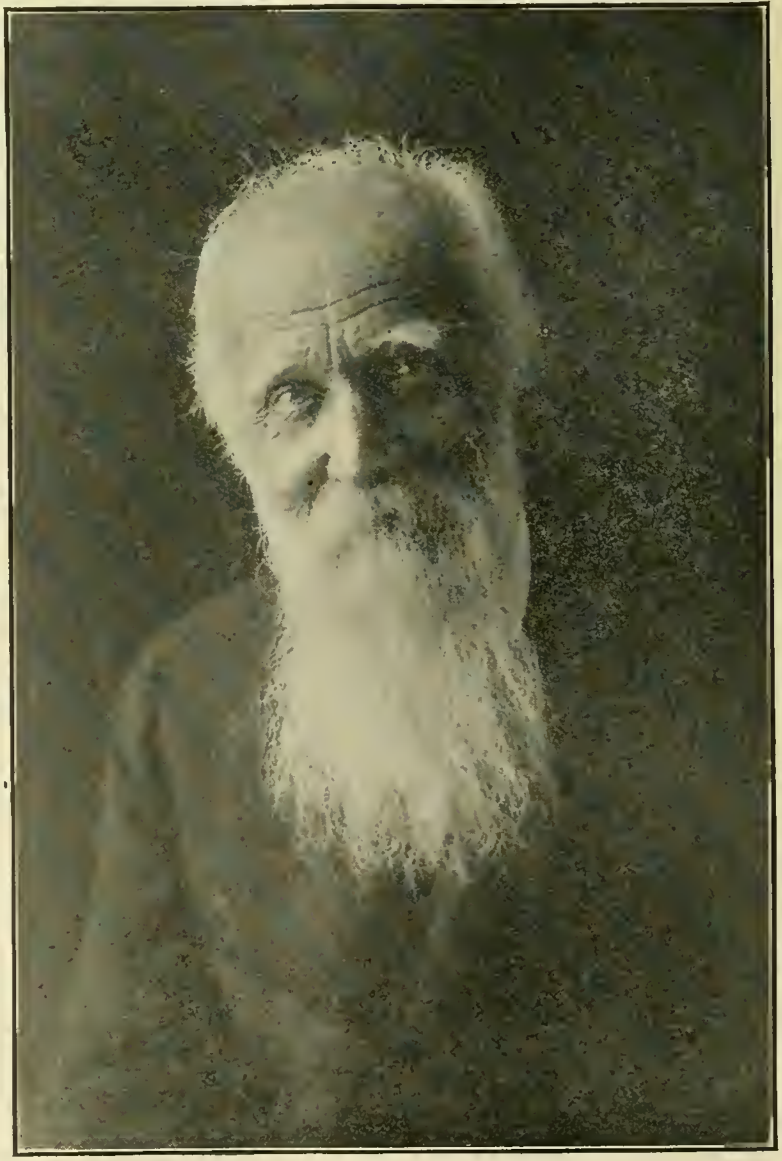
1866. The American Bee Gazette merged into the American Bee Journal, New York, N. Y.
1868. The Illustrated Bee Journal, Indianapolis, Ind.
1869. Annals of Bee Culture, Hawesville, Ky.
1869. The Beekeepers' Journal, New York, N. Y.
1871. The National Bee Journal, Des Moines, Iowa.
1872. The North American Bee Journal, Indianapolis, Ind. Successor to the Illustrated Bee Journal.

H. T. HAGLER, OF VIRDEN, ILL.

1873. Moon's Bee World, Rome, Ga.
1873. The Beekeepers' Magazine, New York, N. Y. Successor to the Beekeepers' Journal.
1877. The Indiana Beekeepers' Magazine, Logansport, Ind.
1877. The Beekeepers' Guide, Kendallville, Ind.
1879. The Beekeepers' Instructor, Somerset, Ky. Later at Adelphi, Ohio,
1879. The Beekeepers' Exchange. Canajoharie, N. Y.
1879. Our Apiary, Shelbyville, Ill.
1879. The Western Honey Bee, Lebanon, Mo
1881. The Kansas Beekeeper, Columbus, Kan.
1882. The American Apiculturist, Wenham, Mass.
1882. The California Apiculturist, Oakland, Calif.
1883. The New England Apiarian, Mechanic Falls, Maine.
1885. The Gleaner, Dalton, Pa.
1885. The Texas Bee Journal, Waco, Tex.
1886. The Beekeepers' Index, Ovid, Mich.
1886. The Bee Hive, Andover, Conn.
1886. Rays of Light, North Manchester, Ind.
1886. Modern Farmer and Busy Bee, St. Joseph, Mo.
1883. The Western Beekeeper, Des Moines, Iowa.
1888. The Queen Breeders' Journal, Marlboro, Mass.
1889. The Beekeepers' Advance, Mechanic Falls, Maine.
1891. The American Beekeeper, Jamestown, N. Y.
1891. The White Mountain Apiarist, Berlin Falls, N. H.
1891. The California Beekeeper, San Francisco, Calif.
1891. The Bee World, Waynesburg, Pa.
1891. The Missouri Beekeeper. Sold to the American Beekeeper.
1892. The Progressive Beekeeper, Higginsville, Mo.
1892. The National Bee Gazette, St. Louis, Mo.
1892. The Poultry and Bee Journal Auburn, Neb.
1893. The Beekeepers' Enterprise, New Haven, Conn.
1893. Success in Bee Culture.
1893. The Nebraska Bee Journal, Fairbury, Neb.
1894. The Beekeepers' Quarterly, Dowagiac, Mich.
1895. The Pacific Slope Bee Journal, Los Angeles, Calif.
1896. The Southland Queen, Beeville, Tex.
1901. The Rocky Mountain Bee Journal, Boulder, Colo.
1902. The Lone Star Apiarist, Floresville, Tex.
1904. The Rural Beekeeper, River Falls, Wis.

The short life of most of the above 43 publications has nevertheless helped progress, by calling attention to the cultivation of the bee.

Colleges have at different times taken interest in beekeeping. The first we know of to give a course of beekeeping was the Michigan State Agricultural College of Lansing. This was



THE VETERAN O. O. POPPLETON, FOR YEARS A BEEKEEPER WITH LONG IDEA HIVES due to the presence there at that time of Prof. A. J. Cook, already mentioned in these essays. At the present day nearly every agricultural college in the United States is either giving or contemplating a course in beekeeping. Capable instructors are at work in 20 or more different State institutions.

A year or more ago we asked for the names of those of our subscribers now living who have been readers and contributors of the American Bee Journal for 30 years or more. The number of replies is limited. But the list is interesting, and we think its place is properly at the end of this series of reminiscences.

56 years. One living man only has been a reader and contributor of the American Bee Journal since its establishment in 1861, and his name is M. M. Baldridge, of St. Charles, Ill. Mr. Baldridge was born in 1838, and is therefore 79 years old. He visited S. B. Parsons, at Flushing, Long Island, at the time when the first Italian bees were imported from Europe. He met Mr. Quinby and Mr. Langstroth, and was also present at the first National Beekeepers' convention in 1870 at Indianapolis, Ind.

Another Old Subscriber and Contributor, J. M. Davis, the Tennessee Queen Breeder

51 years. After its first year, 1861, the American Bee Journal was suspended until 1866. At that time the following persons *now living* became subscribers and contributors of it:

Dr. G Bohrer (84) and his wife (88), now of Chase, Kan., but at that time of Indiana. Dr. Bohrer was also a member of the first National Beekeepers' Association. Mrs. Bohrer is a bee lover also.

E. Kretchmer, of Council Bluffs, Iowa, mentioned in these reminiscences, on page 89 of our March number, was also one of the early writers and contributors of that date.

A. I. Root, the well-known publisher and writer on bees, began his interesting writings at that time and wrote under the *nom de plume* of "Novice." His articles in the Bee Journal were much appreciated. He is now 77 years old.

A. J. Fisher, of East Liverpool, Ohio, claims to be the youngest of the early readers of the American Bee Journal, and the......best looking. Ladies, what do you say? He says his wife won't be jealous if you think he looks young. He is only 69, and that photograph was taken on his birthday. He would like to see the National convention meet again in Cleveland, where it met 46 years ago. He was there.

48 years. Our faithful young-old man, Dr. C. C. Miller, has been with the American Bee Journal since the early days of 1870. We won't tell how old he is. Just read his answers to questions if you want to know.

The old veteran Doolittle comes just after Dr. Miller. He has been also a contributor of all the bee periodicals, and he is only 71.

A. J. Fisher, East Liverpool, Ohio

46 years. J. M. Davis, of Tennessee, one of the reliable queen-breeders, has read the American Bee Journal since 1871.

So has W. D. Wright, the noted beekeeper of National reputation, at whose home was held the Eastern New York meeting which the Editor attended last August, mentioned on page 15 of our January issue.

45 years. O. O Poppleton, of Stuart, Fla., was 74 years old in June, and has kept bees since 1869. Look at that face! Don't you think an editor should be proud of counting such men of brains among his readers? His handwriting is as firm as ever. He is a veteran of the Civil War.

44 years. L. E. Day, of Clinton Falls, Minn., a veteran apiarist, was unable to send us his photograph owing to sickness. We hope he may regain his health soon. He is 80 years old.

40 years. H. T. Hagler, of Virden, Ill., 70 years old, has read the Bee Journal for 40 years, and is still a faithful reader.

38 years. Dr. L. H. Pammel, Professor of Botany in the Agricultural College of Ames, Iowa. In 1879 he was a young man asking questions on botany. He is now a professor, able to give advice and to correct the errors of the teachers of that time. He wrote on botany then and is again giving us the result of his experience of a lifetime.

37 years. Eugene Secor, whose fine features ornament the cover of our May number, has been a leading beekeeper and has held some of the principal positions in the National association, being at one time General Manager and at another President of that institution. He says he is "afraid of the young men because 'tis the young fellows who run things now." But the young fellows cannot run things without the occasional advice of such men as he.

34 years. L. B. Smith, of Llano, Tex.; Henry Stark, of Nunica, Mich.; J. L. Strong, of Clarinda, Iowa, have all made a specialty of beekeeping.

33 years. R. Lowey, Woodrows, Ont.

DR. G. BOHRER AND WIFE OF KANSAS

31 years. A. F. Brown, Jacksonville, Fla.

Let me close this series of reminiscences by wishing to each of my readers that he or she may remain a constant reader of the "Old Reliable" for 50 years to come.

Perfect Combs

BY D. M. MACDONALD.

ONE of the most valuable assets in an apiary is a complete set of perfectly built combs. It is grand to possess ten combs, flat as a board, in every hive. Let every cell in all these combs be worker-cells. There should be no thick and thin parts, no twists and waves in any single comb. Every one should be perfectly interchangeable. When a comb is laid flat on the work bench, it should show no heights and hollows, no long deep cells and no short shallow ones. All should approximate the natural depth of a cell. There should be no transition cells, all should be of a true hexagonal form. All of us should have an ideally perfect comb to work up to, and all failing to approach this ideal should be rigorously discarded.

Apiary of J. B. Holsinger, of Johnstown, Pa., packed in winter cases

The beekeeper has it largely in his own hands to secure this high point of perfection. An irregularly placed hive tends to create irregular building; therefore, hives into which swarms are run should be laid down with their stands on a dead level. This small item is worth attention. Every frame should be nailed up with every angle a right angle. Then they should be hung truly perpendicular. They must be very accurately spaced at 1½ inches, or better, 1 9-20 inches. It goes without saying, that when worker-cells are desired, full sheets of foundation, embossed with worker-cell bases, should be used. It is often presumed that under normal circumstance, well-nigh 100 percent should be obtained, but this is a fallacy, as experience teaches us that rarely is such perfection attained. Brood foundation can so easily be affected by extremes of heat or cold that it readily buckles, stretches, twists, or at times snaps, thus causing serious defects to arise.

The heat of the hive is at times excessive, the weight of bees may be too heavy, the wiring may prove defective, the sheet may be badly fixed, the quality of the wax may be uncertain—all these and many more points may affect the degree of perfection attained by the bees. A craze may seize the workers in favor of securing some drone-cells, also the weather conditions may lead to defective building, while the nature of the flow may prejudicially affect it. The quicker the brood-nest is constructed the better. A poor flow leads to loitering and scamped work. While the degree of perfection may thus depend on the weather, the flow or the bees, the beekeeper himself in nine cases out of ten is the chief transgressor; perhaps more frequently from want of thought or want of knowledge than from any desire to neglect his work. Foundation as now manufactured is so nearly perfect, frames, wiring outfits, and systems of fixing have reached so high a degree of excellence that, when rightly manipulated, almost all defects have been well-nigh eliminated, but in spite of all this, defective combs will obtrude themselves.

Avoid drone-comb. Not only is their presence in the hive not anything like an asset, but they are encumbrances, nuisances, and even a detriment when working for honey. Drones not only fail to provide in any way for their own support, but are a heavy drain on the stores laboriously collected by the workers. In general, foundation all-worker-cell base eliminates them. Even when starters are used in frames when hiving swarms, if the space is contracted, only six frames being provided for a time, drone-comb can be hindered. Practically, the first ten days after hiving, bees construct only worker-comb, and, if there is a good flow on, the above number of combs should be fully constructed in that time.

During a second period of ten days bees readily build drone-comb, but this can be avoided by giving frames with full sheets of foundation to complete the number desired. In this case place the latter frames not outside towards the hive sides, but near the center, between the flattest faced combs available. When renewing combs in any established colony, full sheeted frames should always be supplied, as otherwise bees would invariably build only drone-comb. Age alone is no true criterion by which to guage the value of combs. Some may last double the time others may. It is generally advisable to renew a certain percentage of the works after some years' use. This should be done systematically and on a set principle.

A good plan is to shift all defective combs to the right side of the brood next to the dummy. Then during spring cleaning, when they have been cleared of honey, they can be withdrawn and run down into wax. To renew them, and make certain they will be replaced by combs well and truly built, requires enlightened care. The best place to have them drawn out is in a super during a full honey flow. Almost every cell will be worker size, and the combs will be flat as a board all over the surface. The next best place is in a rather weak colony possessed of just so many bees that they can be induced to build. A fairly strong nucleus may be a good substitute. In both cases the work is almost

Apiary of J. B. Holsinger on July 4, 1916. What a difference between the summer and winter view of the same apiary invariably well finished off. As a rule, however, these combs are constructed in the brood-nest. Many slip in a frame with a full sheet anywhere and anyhow, with the result that the comb is thick here and thin there, and the whole surface generally uneven. This need not necessarily follow the building of combs in the brood body. Choose two combs nice and even in the very center, the inward faces all a mass of sealed brood. Insert the frame there, and you will in general be delighted with the resultant comb.

Repairing combs may be undertaken in spring with good results. Bees may have been busy all day when weather permits, carrying in pollen and perhaps driblets of nectar from early fruit bloom. At night they seem to have a natural crave for building and repairing any defects in the brood-nest. They should be encouraged in this laudable purpose. If defects are not so bad as in the last category, where frames had to be withdrawn, it pays to have faults remedied. And this the bees will carry out, making old combs look almost as good as new. Combs with a lot of dry hard pollen in a good many cells may have the walls cut down close to the midrib, and during the night the bees will build them up perfectly.

Other combs containing patches of drone-cells may have these parts cut out, and a piece of worker foundation or worker-comb can be neatly fitted into each vacancy when the workers will fit in the whole firmly and securely, and so neatly that one can scarcely detect the joinings. The same may be done with corners of comb showing mildew or mold. The defective parts may be cut out as squares or triangles, but a handier plan is to use a circular tin lid. With a sharp edge this cuts out the comb neatly. A similar piece gotten from reserve worker-comb can be fitted in securely. Place the frame in a strong hive at night, and in the morning you will scarcely detect where the patch has been fixed, as the bees have repaired it so neatly.

Langstroth said: "Good straight worker-combs, not too old, are the most valuable capital of the apiarist. To the bees they are like cash capital to a business man." It pays, therefore, to use all diligence and care to preserve combs well and truly built. The bees are undoubtedly the best caretakers of comb, and, while under their charge, little evil can befall it. Surplus combs and those lying over for next season's extracting are in a different category, and require to be passed periodically under the scrutinizing eyes of the beekeeper. Damp, mildew, mice, and moths are their worst enemies. A nice dry room will hinder any development of the first two evils if the combs have been thoroughly cleaned up by the bees in early autumn.

Wage a constant war against the mice. A very ancient writer advised "cats, traps, and henbane" as a "souvereign remedie" against them. Fumigation with sulphur fumes or with bisulphate of carbon, should prove thoroughly operative in destroying moths in all stages, but combs should undergo the process periodically in order to insure that any merely scotched in the one operation may be thoroughly killed in the succeeding one.

Scotland.

Legal Service Department

CONDUCTED BY FRANK C. PELLETT, ATLANTIC, IOWA.

"You will note by the enclosed clipping that the Board of Health of the town in which I live has passed a ruling aimed solely at myself. While no action has yet been taken their finding will probably be that my apiary is inhabited by ferocious bees. Will you please tell me to whom I can appeal in the state for an equitable ruling." The clipping reads as follows:

"Honeybees were brought under the jurisdiction of the city Board of Health at a special meeting last night. Hereafter like autos and dogs they must be licensed.

The Board of Health claiming sole jurisdiction passed a new ordinance last night which provides 'No person shall keep in any part of the city any hive of honeybees except by permission of the Board of Health, which permission shall specify the number and location of the hives.'" NEW YORK.

PRACTICAL DEMONSTRATION IS THE KEY FOR MAKING GOOD BEE-KEEPERS, AND IT IS ALSO THE BEST WAY TO FIGHT BROOD DISEASES

Here is certainly something new, We have long been familiar with the efforts of town councils to undertake to prohibit the keeping of bees within the limits of the town or to require that they be licensed in some states. For the Board of Health to claim jurisdiction is certainly unusual to say the least. Boards of Health are, as a rule, clothed with very arbitrary powers. In just what manner they determined that the keeping of bees comes within their exclusive jurisdiction is hard to guess. It is unheard of that bees should be considered an agency in the spread of infectious or contagious diseases among the human race. As a general rule, a Board of Health cannot enforce rules for the keeping of animals except in emergencies, such as an epidemic of rabies or something similar.

Our correspondent has not given sufficient information to enable us to give a reply of much value in his particular case. As far as the newspaper clipping goes the board has not prohibited the keeping of bees or provided any penalty, but only required a permit. It may be that they can lawfully go that far whatever their object may be.

Our correspondent should consult a local lawyer in the event the board refuses to issue a permit. Even though he disregarded the rule it is hardly probable that they will attempt to destroy the bees since they are property of considerable value, and they would find it very difficult to show that the public health was endangered by their presence. In many cases such rules have been passed in the spirit of bluff, and when no attention has been paid to them nothing has come of the matter. It is probable, however, that in case of this kind they might cause the violator's arrest under some general ordinance assessing a penalty for failure to observe the rules of the board.

NOTE.—Questions intended for this department should give all possible facts bearing on the matter at issue, as laws differ so widely in different States that it is difficult to give a satisfactory answer unless the case is stated very fully.

Bear in mind that "more flies are caught with honey than with vinegar." So in your intercourse with your neighbors, be as kindly as possible and avoid friction. Have no recourse to law if you can possibly help it.

Flying Zones for Bees

BY W. H. MCWILLIAMS.

DO bees have flying zones in which to work, the older bees going the farthest, and the younger ones working nearer to the hive? I have proven to my own satisfaction that they do.

For years I have been a chronic bee hunter, and oft times start with bees in my decoy box which are from three to five miles from home. In such instances all the bees working on the bait are old ones; they are shiny, and their wings are many times frayed. As long as I remain at this distance from the tree, these old bees come in increasing numbers, but as I advance towards the tree the bait begins to draw the younger bees.

At a distance of half a mile from their home, very young bees are decoyed, downy, fuzzy fellows foolish and playful in their actions. They run over the box and down the sides, and many times light on my clothing or on the leaves near by.

When such bees are attracted I may be very sure that the bee tree is a very good one, because it will have brood probably in all stages and a good working force. On the other hand, if only old bees are drawn even when in close proximity to the tree, I may be very sure that the bees are either a fresh swarm hanging on the limb or domiciled in a tree, or else that they are rather weak and queenless.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

A Beginner

I have eleven stands of bees in single-wall standard eight-frame hives. Only three of them had the brood frames filled with foundation and wired. On account of lack of funds my order for supplies was late—as late as this letter of inquiry to you—but I will have ten frame standard hives which I know how to assemble. By the time your answer comes will it be too late to transfer the bees from the oldest hives into the new ones? Would not that be the best thing to do? If I find them full of moths what shall I do? How can one detect the presence of moth before they hatch? I understand that if the colonies are strong there will be no moths.

The original start of these eleven stands was a stray swarm. Last summer we got another stray swarm. I do not know what kind they are but I think not all the same. I know their disposition is not the same. I think none of them are Italian. When and how could Italian queens be introduced?

Bee stings make me very ill yet I am not afraid of bees. What does dead young bees before a hive indicate?

Hastings, Ill. NELLIE GRAY.

The case is by no means hopeless, and fortunately there is time enough to get things in better shape. In the eight hives where there was no foundation, it's a safe guess that the combs are built in all directions, so that it is the same as if the bees were in box-hives.

Formerly the favorite time for transferring was in fruit-bloom, but nowadays the tendency is to wait until the bees swarm. When they swarm, hive them in the new hive furnished with foundation, set it on the old stand, and set the old hive close beside it. If now they are left to themselves a second swarm is likely to issue in perhaps eight days. This second swarm may be hived in a new hive and set in place of the old one, the old one being set beside it. Then 21 days from the time the first swarm issued, when all the worker-brood will have emerged, you can break up the old hive, add the bees to one of the swarms, and melt up the combs.

When the bees are in a common box-hive, you can chop the hive to pieces, but in this case you want to save the hive and the frames. Turn the hive upside down (of course you will use smoke to keep the bees in subjection,) and with a hand saw saw down close to the wood on each side, and also at each end if the combs are attached at the ends of the hive. Now, holding down on the frames, you can lift off the hive, when the combs will be at your disposal.

It may be, however, that you do not want to have the second swarm, preferring to keep the whole force of the colony together. In that case, instead of waiting for the second swarm, you will, a week after the first swarm issues, move the old hive to the other side of the swarm, or, still better, set it on top of the swarm. That will throw the field force into the swarm, weakening the old colony so that it will not swarm again. Then 21 days after swarming you can break up the old hive as before directed.

With regard to moths, it is not likely a great many are present unless some colony is very weak. At any rate there is nothing you can do until the bees are in frame-hives, and then there will be nothing to do.

The first indication of the presence of the larvae of the moth will be the silken galleries made by them on the surface of the sealed brood. You are right; a strong colony will keep the moth at bay, and Italians are very much better in that respect than blacks or hybrids.

Perhaps it may be as well not to introduce Italian queens until near the close of harvest, and you will receive instructions for introduction from the breeder who sends you the queen or queens.

It may be some comfort for you to know that the more you are stung the less the effect will be.

If the dead young bees thrown out are the skins of the larvæ, it indicates starvation. If fully developed young bees are thrown out, it is likely the work of the bee-moth, or, as they are often called, wax-worms. Later in the season it might be the massacre of the drones.

Three Sisters

I feel quite set up by the attention given to my question in regard to the preventing ot the tearing down of full sheets of foundation when given to a swarm [page 131 April American Bee-Journal.] The answer is so full and satisfactory that at present I can think of no more questions to ask.

I should have been more specific; the full sheets were fastened by the kerf-and-wedge plan pretty firmly. I don't remember that any were pulled out from behind the wedge but several were torn away from the top-bar.

The frames were wired and the wires were embedded with a cold wheel in a cool place at a cool time. Your answer shows me what was the main cause of the trouble. In some instances the wires had separated from the sheets, in others it had been gnawed away. Medium brood-foundation was used. Your answer is not only helpful in telling me what to do but satisfactory because convincing me that it will not be necessary to paint with wax, an undertaking I do not fancy.

We are three sisters who are trying to support ourselves with poultry, bees and a garden on a six acre place, half of it wooded, in a picturesque location within nine miles of our country's capital. My sisters attend to the poultry and garden while I take care of the bees. I do nearly all the work myself, have a hive-lifter and a big wheeled cart. I have sixty-one colonies now, wintering thirty of them in large dual cases built according to plans similar to those used by Dr. Phillips. The others are protected with wrappings of tar paper, cushions over supers and deep telescope covers on top. Our honey flow for the best honey begins early in May with black locust, followed immediately by tulip, poplar and then clover while tulip is still in bloom, if it is a clover year which does not happen every year. From these sources, when the light honey is plentiful, we get a natural blend of fine flavor and appearance. But it is very important for the best results to have colonies strong rather early. My success in this respect last season was not satisfactory, so in spite of an unusually good honey flow my harvest of the best quality was but little over 2500 pounds. For this reason I am trying heavier winter protection.

I run for both comb and extracted honey, principally the latter, sell at retail, distributing by parcel post. I run an advertisement once a week in a Washington paper and have for-sale signs on the highway which passes near our home. Business is not very brisk, sometimes discouragingly slow, but I am gradually getting known. It is only a few years that I have had so large an apiary.

HANNAH R. SEWALL.

Forest Glen, Md.

Women to the Front

A thrill of pleasure was experienced upon receiving a letter with the heading, "Beechbank Apiary and Poultry Yards," and at the upper left-hand corner, neatly printed, the three names:

Hannah R. Sewall,
Mary F. Sewall,
Margaret L. Sewall.

Unquestionably a firm composed of women; but a mother and daughter, sisters, or what? Inquiry elicited the interesting letter found in this department from the specialist in beekeeping.

Another letter-head reads,

Sweet Clover Farms,
Mr. and Mrs. Sam Wilkinson,
Proprietors.

Although Mr . Wilkinson's name comes first, it would not be at all surprising if he should say that "Mrs. Sam" is the more important member of the firm.

Another heading leaves the two members of the firm on exactly equal footing, for it reads:

Sires & Sires,
Producers and Dealers in
PURE HONEY

All this is as it should be, and shows that "the female of the species" is coming to the front to take her proper place in beekeeping. It forms also a good text to urge in this great time of need, when Uncle Sam is insisting that every available inch of ground should be used to add to the world's store of food, and that women should do their bit, that in not many ways could that bit be better done than by taking care of bees. Let it not be forgotten that honey is a food, not only the most delightful sweet in existence, but a nourishing and sustaining article of diet that, pound for pound has few competitors. In Europe they are learning that it is an excellent army ration. At the same time the war has sadly interfered with the supply in that region, and the demand for honey to be exported from this country has already begun. Largely on this account it is predicted that prices will be on an ascending scale such as we have not heretofore known. So for the sake of the pay, as well as for the sake of helping to keep the world from starvation, it is well for some women who are thinking of raising potatoes to consider whether they may not be adapted to the business of beekeeping. Not every one is so adapted, but those who are should not miss their opportunity.

The foregoing appeals particularly to women who are dependent upon their own resources. Another class of women to which the present crisis appeals is the wives of beekeepers. In Europe thousands of colonies of bees have been destroyed by the direct ravages of war, and a still larger number, probably, have been practically lost because the men who cared for them were called to the front, leaving no one behind competent to manage bees.

Some woman may say, "That doesn't appeal to me. My husband manages the bees, and I have enough to do with my household cares without troubling myself with his business. Only those between the ages of 21 and 31 are to be called to the army, and my husband is over that by ten years or more, so why should I bother my head to learn how to run the bees?" Good woman, don't be sure. There are those whose judgment is worth minding who say the present war is likely to continue five years, possibly ten; that as more and more men are called out it will be necessary to call out older men; so that you are not altogether certain how long it will be before you are left with an apiary on your hands. Nowadays "preparedness" is a good motto, and if you are wise you will make yourself ready to do your "bit" by going into the apiary this summer.

MISCELLANEOUS NEWS ITEMS

The Iowa Short Course.—The first summer short course in beekeeping at the Iowa College of Agriculture was held at Ames May 28 to June 2. The course was hurriedly prepared and offered with little advertising, owing to the fact that it was not finally decided that it should be held until near the close of the school year. However, about thirty beekeepers aside from the regular college students enrolled and the course was a genuine success. A number of well known beekeepers from various parts of the state came to spend a day or two to lend their encouragement and to get new ideas. Mr. G. Jaqua of Traer, Iowa, was the oldest student in attendance. He is 89 years old and has been a beekeeper for forty years. He announced his intention of coming again next year.

The beekeeping work has been making real headway at Ames but a few months and is showing surprising interest. Before the final close of the school year more than 100 girls, students at the college, were taking the course in beekeeping. There is much enthusiasm among the students as well as among the faculty concerning the work and the next school year bids fair to see it firmly established as part of the regular work of this institution.

Prof. F. E. Millen, formerly of the Michigan College is in charge of the work. E. W. Atkins formerly assistant to Mr. F. W. L. Sladen, Dominion Apiarist of Canada is in charge of experimental work in Apiculture. With Dr. L. H. Pammel, at work on the honey plants, Iowa is starting in to accomplish results. The new law also places the inspection work under direction of the college and provides for regular extension work as well.

Both Millen and Atkins were trained under Morley Pettit at Guelph, Ontario and are among the first men specially trained in regular apicultural courses to be placed in such positions. This is a striking indication of how new this work is in our colleges.

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Massachusetts Beekeeping School.—It has been arranged to hold the annual Beekeepers' School under the auspices of this Institution, in Dalton, Massachusetts, in the heart of the Berkshires. Dalton is a beautiful summer place. There are a number of large apiaries in the vicinity as well as apiaries on estates. A detailed program is being compiled.

The school will be held July 11, 12, 13 and 14th. All persons interested are invited to attend. Copies of the program will be mailed upon request. There is no fee or expense attached to attending the school other than perhaps the purchase of a bee-veil.

The program will cover the following points, as well as other subjects. The first day is beginners' day, and will include a full understanding of the necessary materials for beekeeping, of

ONE DIVISION OF THE CLASS OF MORE THAN 100 GIRLS TAKING THE BEEKEEPING COURSE AT THE IOWA COLLEGE OF AGRICULTURE UNDER PROF. MILLEN bee behavior, and life of bees, with instructions as to manipulation and policy of the beekeeper. The second day will deal with the problems of swarming; measures of swarm control, the making of increase, and comb-honey production. In the afternoon the program will be devoted to queens and queen-rearing. The third day is extracted honey production day, wherein all the phases of production and marketing will be covered. The fourth day is a general field day, and is announced by the Berkshire County Beekeepers Association. This program will be a general interest one, dealing incidentally with the diseases of bees, and more especially with the newer problems.

The Northwestern Kansas Beekeepers' Association held a field meet at Chapman, Kan., May 14.

While the attendance was not large it made up in quality what it lacked in quantity. The meeting in the morning was held at the Dickinson county high school and demonstrations in forming queen-rearing nuclei and 3 frame nuclei for sale were made. At noon dinner was served by the cafeteria department of the high school, A. H. Diehl and H. A. Huff standing treat for the visiting members. After dinner, the meeting adjourned to the Golden Belt Apiary where more demonstrations were made followed by a number of talks. All present enjoyed the meeting and adjourned to meet later at Blue Rapids, Kan., at the call of the members from that place.

HARRY A. HUFF, *Sec.*

Dandelion Honey.—The production of honey from dandelions has always been an unknown quantity to us here, and the first direct contact the Dadants have ever had with the dandelion honey was last summer when our editor tasted dandelion comb honey in Vermont. And the taste was unmistakable.

This year for the first time, we can report that our own bees gathered honey from dandelions. When the bloom was at its height a few weeks ago, at one of our apiaries the bees stored considerable dandelion honey in their brood chambers and "yellowed" the tops of their combs in a manner similar to the "whitening" from clover.

There is no doubt that the dandelion is becoming more plentiful, in this locality at least. It remains to be seen whether the increase of this plant will in time tend to make a steady honey flow between fruit bloom and clover instead of the customary honey dearth.

Telegraphic Market News Service

We call the especial attention of our readers to an article on this subject in our contributed columns in which the idea of this service is exexplained. We urge all to get in touch with the proper authorities in Washington so that you too may get the benefit of such service. No matter whether you are a small or large beekeeper, such news should help you to stabilize your honey prices.

Proposed Telegraphic News Service on Honey by Department of Agriculture

In response to urgent requests, the Office of Markets and Rural Organization of the United States Department of Agriculture is planning to extend its telegraphic market news service to include reports on honey. Practically all growers in the important commercial sections shipping fruits and vegetables are familiar with the market bulletins which have been distributed by the Office of Markets during the past two seasons. These daily bulletins, which are free by mail to any who request them, cover nine of the more important perishable commodities and show daily the number of cars of each commodity which have been shipped from each state during the past twenty-four hours, as well as the following information for each of the eighteen markets reported by representatives of the department. The number of cars which have been received on the market during the past twenty-four hours segregated by originating districts; the general quality and condition of the produce from each section; the weather conditions; and finally the prevailing wholesale (jobbing) prices at 8:00 a. m. These reports are telegraphed to Washington, summarized and edited, and rewired to the various markets where representatives are stationed, with the result that printed bulletins are issued and distributed simultaneously about 1:00 p. m. of the same day from all of these offices. Some idea of the size of the service may be secured when it is understood that over 3,000,000 bulletins were distributed last season to over 50,000 persons located in more than thirty states.

Although it is estimated that only 10 per cent of the honey crop is distributed in car-lot quantities, it is claimed that prices for the local movement depend to a large extent upon the commercial price. An accurate and unbiased report of prevailing prices in the larger markets should do much to prevent speculation, steady the market and tend to eliminate the unfortunate practice of throwing the entire output upon the market at the opening of the season, with the resultant drop in prices and serious scarcity later in the season.

It is impossible at this time to state definitely the exact form in which the proposed honey reports will be issued, as representatives of the department are now visiting the larger markets and interviewing members of the trade, representative producers, and editors of beekeeping journals to ascertain the exact information which is needed, the frequency with which the reports should be issued and other essential details. It appears probable, however, that the reports will be issued semi-weekly, weekly, or even bi-weekly, as daily reports are not essential as in the care of perishable fruits and vegetables. In contents they will follow closely the bulletins now being issued which have just been described. The service will be started about July 1 and the information will be made public through the newspapers and beekeepers' journals as well as by separate bulletins by mail to all interested persons who request the information. Inquiries should be addressed to Charles J. Brand, Chief, Office of Markets and Rural Organization, U. S. Department of Agriculture, Washington, D. C.

A Special Beekeeping Train

For several years the special agricultural train has been a popular method of taking the work of the agricultural colleges direct to the farmers. Tennessee enjoys the distinction of taking out the first beekeeping special. The train was out for three weeks and upwards of seven thousand people

MEMBERS IN ATTENDANCE AT THE NORTHWESTERN KANSAS BEEKEEPERS' FIELD MEET AT CHAPMAN, KAN.

were given instruction.

Beekeeping and poultry go together so nicely that the two were combined, the work in beeekeeping being presented by Prof. C. E. Bartholomew formerly of the Iowa Agricultural college but now in the cooperative extension work of the U. S. Department of Agriculture stationed at Knoxville, Tenn. Mr. Crane of the same institution had charge of the poultry.

The train was run over the lines of the Nashville, Chattanooga and St. Louis railroad in Tennessee, in charge of A. D. Knox of the industrial department. Sixty-nine meetings were held in various parts of the State and great interest was manifested by the visitors. Hundreds of men who have heretofore kept their bees in box-hives were instructed in the proper management of bees and shown how futile it is to hope for a good return without good equipment. The car was fitted up with hives and other necessary material essential to successful beekeeping so that everybody was shown by actual demonstration what to use and how to use it. The railroad officials express themselves as much gratified with the results of the special and it is very probable that other similar trains will go out in other parts of the country.

As one of the first three men employed on the department for extension work in beekeeping Prof. Bartholomew has found a great opportunity and is fully alive to the possibilities. We look for beekeeping to develop rapidly as a result of the spread of extension facilities.

Special Notice to All Beekeepers in the Northwest.—At the last meeting of the Chicago-Northwestern Beekeepers' Association a committee was appointed to recommend prices for honey, wholesale and retail. The committee wants the name and address of every beekeeper in the States of Wisconsin, Illinois, Indiana and Michigan who have ten or more colonies of bees, for a mailing list. We expect to send out three letters about July 15, Sept. 15, and Nov. 15, provided we have sufficient funds.

Hurry up and send in your name and the names of your neighbor beekeepers, and if not a member of this association we would like to have your dues of $1.50, as we will need all the funds we can get to send out these letters.

Any beekeeper outside of the above mentioned States who is not a member can have these reports by sending 10 cents to pay for printing and postage. Send all names or dues direct to

JOHN C. BULL, *Sec.-Treas.*,
1013 Calumet Ave., Valparaiso, Ind.

Notes By the Way

One is frequently reminded that it is impossible to keep bees by rule. Every locality and even every colony is a law unto itself. In answer to an inquiry as to when to put on supers, Dr. Miller has said, when the first clover blossom appears. This is perhaps as good a rule as any. However, some colonies will not be ready for supers for a long time after clover begins to bloom while others will swarm before that time unless they be given room. This is written just at the close of fruit bloom in May, yet some of our colonies have already stored considerable honey in supers. Occasionally we have a year in Iowa when strong colonies will store comb-honey from dandelion and finish the sections in fine shape. In such a season much would be lost from the delay in giving supers until the first clover blossoms appeared. The time to give supers is when the bees are strong enough to occupy them and there is something in the field for them to gather.

The yellow flowers of the buffalo currant, *Ribes aureum*, are very fragrant and apparently contain much nectar. I have often noticed the bees working on the blossoms but since the corolla tubes are a half inch or more in length supposed they were getting only pollen. One day recently I found bees which were unmistakably getting nectar from this source. Upon close examination of the flowers I found that many of the tubes had been slit entirely down one side by some unknown agency and the bees were inserting their tongues into the slits. I am wondering whether a similar condition may not occasionally occur with the red clover and thus account for the reports of yields of honey from that source.

LECTURE CAR ON THE BEEKEEPERS' SPECIAL, TOURING TENNESSEE

The past winter has been an unusually hard one in Iowa, yet our bees have consumed less stores than usual and little more than half the amount required the winter previous. Apparently the difference is in the shorter period of brood-rearing. Our best colonies discontinued brood-rearing in October and did not resume until late in February or early in March. (Wintered in packing cases outside.) The farther south the more honey is likely to be consumed for wintering because of the larger amount of brood reared. F. C. P.

Great Economy Possible

"A great economy in the consumption of tins would be effected if the public would, as far as possible, buy the single 'ready-to-eat' foods, such as baked beans, meat loaves, and the like, of the 'heat-and-serve' kind, from delicatessen and bake shops. These foods constitute one of the largest drains on the tin supply. To relieve this drain would release large quantities of tin for the imperative summer demand.

Thousands of people were given instructions in beekeeping along the way

"For home use, in putting up jellies and preserves, the fiber containers may be used, and will be found cheap and satisfactory. Information as to where they may be obtained will be gladly furnished inquirers who address the Bureau of Foreign and Domestic Commerce, Department of Commerce, Washington, or any of its branches in the several cities of the country."

It seems to us that "fiber" containers coated inside with a light paraffin coat would be very serviceable for honey.

Productive Dairying.—We are in receipt from the publishers, J. B. Lippincott & Co., of Philadelphia, of another book in the Farm Manual Series, to which belongs Frank C. Pellett's book "Productive Beekeeping."

The new book is entitled "Productive Dairying," and is written by that excellent authority on the subject, R. M. Washburn, who is Professor of Dairy Husbandy at the University of Minnesota. The book contains 432 pages and 131 illustrations. The aim of the author is to take dairying out of the inefficient businesses and put it on a paying business basis.

Any one interested at all in dairying will do well to get this book. It sells for $1.75, and can be obtained direct from the publishers, or we can furnish it direct from this office.

◆

Combs Horizontally Between Hive-Bodies.—Last June during the commencement of the honey flow from clover, we tried an experiment with eight colonies of bees by placing between the two Heddon hive brood-bodies a shallow frame, a frame about 1¾ inches deep with three sides only, the open side has a skeleton drawer to slide in and out. On this skeleton drawer we laid two Heddon frames filled with drawn brood-combs which had been wired and were old and strong. When the combs were in place a good bee-space was maintained both above and below the combs, the combs were empty when placed in the drawer, but were soon used by the queens. Eggs and brood were soon found on both upper and lower sides, some honey was also stored around the outside edges of combs; later on queen-cell cups were built on the underside of combs and also in other parts of the hive.

In no case do I remember of finding queen-cells on the horizontal combs only. I found trouble in removing the drawer, as the empty spaces were full of bees. Also many brace combs were built up under its support, the horizontal combs, the bees having the idea that these combs were liable to sag down and needed some supports, or they needed some step ladders to walk up. Anyway, when I attempted to draw out the combs, the brace-combs underneath would mash bees, honey, and queen-cells, and so roll them together that I soon gave it up.

If I try it again this season I think I would have a slatted bottom in the drawer. Our aim is to have a quick and easy method of finding queen cell conditions in colonies preparing to swarm. E. T. Bainard.

Lambeth, Ont.

◆

Canning Fruit With Honey—Can What you Can.—There is no mystery or luck about the successful canning of fruit. If properly done, failure is almost out of the question. The fruits or vegetables should be barely ripe, never over-ripe, perfect of their kind, or at least with no fermentation started in them, and the sooner they are taken from tree or garden and sealed up in jars the better New fruit jars are best put over the fire in cold water to cover them, brought slowly to a boil, and slowly cooled; then they will stand greater extremes of heat and cold.

If particular about keeping the fruit in shape, or where a large amount is to be done at once, it is usually put uncooked into the jars and covered with the honey. The jars are then set into a larger boiler with a perforated rest under them to keep them from the bottom. Fill the boiler with cold water nearly to the shoulders of the jars. Screw the tops on rather loosely; put the cover on the boiler and bring to a boil. Both fruit and vegetables can be done up in this way. As a rule the latter is more difficult to keep than fruit, and require much longer cooking.

Twelve quarts of raspberries require two quarts of honey. Put two quarts of the fruit in the preserving-kettle and heat slowly on the stove. Crush the berries with a wooden vegetable masher and spread a square of cheesecloth over a bowl and turn the crushed berries and juice into it. Press out the juice and turn it into the preserving kettle. Add two quarts of honey and put it on the stove. When the syrup begins to boil, add the remaining ten quarts of berries. Let them heat slowly. Boil ten minutes, counting from the time they begin to bubble. Skim well while boiling. Put in cans and seal.

Of cherries, take six quarts, 1½ quarts of honey. Measure the cherries after the stones have been removed. Pit them or not, as you please. If you pit them, be careful to save all the juice. Put the honey in the preserving-kettle over the fire until it simmers. Put in the cherries and heat slowly to the boiling-point. Boil ten minutes, skimming carefully.

Of pears, plums, and peaches, you take the weight of the fruit in honey. Plums should boil about fifteen minutes; peaches and pears, from twenty to thirty.

Blackberries are put up same as raspberries.

Of strawberries, take four quarts of fruit and 1½ quarts of honey. Boil ten minutes. From the time it begins to boil, skim well.

Of rhubarb, take equal weight of fruit and honey. Boil ten minutes.

Of apples, take two quarts of fruit and one pint of honey and half a pint of water. Boil twenty minutes.

Of corn, take two quarts, cut off the ear, half a pint of honey, one pint of water, four even tablespoonfuls of salt; boil twenty or thirty minutes, then put into jars or bottles,

Of tomatoes, take three quarts, one pint of honey, three tablespoonfuls of salt; boil the same as corn.

Of corn and tomatoes, take two quarts of corn, two quarts of tomatoes, one and a half pints of honey, half a pint of water, five even tablespoonfuls of salt; boil thirty minutes, then seal.

Grape, raspberry, blackberry, cherry, plum, and peach juices are made as follows: One quart of juice, one pint of honey; boil from twenty to thirty minutes. [Mrs.] H. K. Beard.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
Dr. C. C. Miller, Marengo, Ill.
He does not **answer bee-keeping questions by mail.**

Location—Queens—Ventilation—Inspector

1. Which of the districts of North America as described on page 116 of the American Bee Journal, is best for a beekeeper to move to in the United States?

2. What is the best plant as a honey producer in this locality? I wish to have one that will bear the same season it is planted.

3 Are virgin queens sold at 25, 30, and 45 cents profit, or would you advise me to buy a higher priced queen, an untested, tested, or select tested?

4 How can I increase my colonies artificially? I was thinking of taking the two center frames of brood and bees from one colony and putting these into an empty hive with foundation, as I have no drawn comb.

5 Will bees in pound packages and nuclei from Alabama or Texas arrive in Grand Rapids in good condition?

6. What is the best method of ventilation for the summer for a person who sees his bees about once a week?

7. How often should I requeen, conditions being normal?

8. Do you consider it necessary to clip queens' wings?

9 How can I change spacing brood frames from 1⅜ inch to 1½ inch, center to center?

10. Is there an apiary inspector in Michigan? Who is he, and how can I reach him?

Michigan.

Answers.—1. If I were obliged to move into a new district this year, I wouldn't know which one to choose. There are advantages and disadvantages in each, and quite often it happens that if a beekeeper move some distance to a new location he is glad to move back again.

2. Mignonette would give a good yield this year if you should plant it largely; but you would not get honey enough to pay. If beans are a paying crop in your locality they might do.

3. Virgins are hardly advisable, unless you have excellent drones. What kind of laying queens it is best to buy depends on circumstances. As a rule, it may be as well to buy untested, and buy in a larger number.

4. That's one of the questions that belong to your book and not to this department which is not supposed to take the place of a book, but to be supplementary. Perhaps no book gives more fully the different plans of increase than does "Fifty Years Among the Bees." The plan you suggest will answer, in a way, as will almost any sort of division, but if you trust to the two frames of brood and bees on a new stand, I wouldn't give much for the queen they will rear. Take the queen with the two brood and bees, and there will be left on the old stand a strong force to rear good queen-cells. A week or ten days later let the two hives swap places.

5. Likely they will.

6. The ventilation should be the same whether you see your bees once a week or once an hour. It doesn't matter such a great deal how the ventilation is given, so there is enough. I have an entrance the width of the hive and two inches deep, and beside this generally a quarter-inch opening at the back of the hive under the super. Some raise the hive half an inch or more by putting blocks under each corner.

7. Opinions differ. Some think it wise to requeen each year or each two years. Others leave requeening to the bees. If you have good bees it is safe to leave the matter in their hands, in the average locality. I never kill a queen on account of age, but if a queen doesn't come up to the mark I replace her, no matter how young she is.

8. Hardly absolutely necessary, but if you should offer me half a dollar apiece to let my queens go unclipped, you wouldn't have many half dollars to pay.

9. One way is to use the same kind of spacers I have been using for many years,

common single nails driven into the end-bars the proper depth.

10. B. F. Kindig, State Inspector, East Lansing, Mich.

Result of Put Up Plan—Disease

1. A colony swarmed on April 3, and was treated on your "put up plan" the same day, leaving two frames of brood below. On April 7 I took away those two frames of brood, giving them two others from my best queen. April 10 I "put down the queen," placing the hive which had been below with its two frames of brood and bees on a new stand. The next morning I found where I had "put down the queen" there had been a general fight and more than a quart of bees had already been killed. The weather was cool and cloudy, probably there had been no honey coming for several days. Was this the cause or was it because I was three days late in putting down the queen?

2. The last few days I have lost a great many bees the ground for 10 or 15 feet from the hives being thick with them crawling around, apparently too weak to fly. Their appearace is normal as far as I can see. The abdomen might be a little enlarged, but not very pronounced. There is no trembling or nervousness, in fact the opposite. They seem rather dopey and slow of movement, like bees when the temperature gets low. The fruit bloom is past by about two weeks, so I hardly think they have been poisoned by spray. What is the cause?

CALIFORNIA.

ANSWERS.—1. This is new to me; never had any trouble of the kind, although I think I never left the queen up so long. I hardly think the trouble would have occurred from either the long time alone or the lack of forage, but it took the combination of both causes.

2. I give it up. It looks rather more like poisoning than anything else.

Hives—Sections

1. I have three hives of bees that wintered in good shape, and I am rather in doubt as to what style of hives to buy. Do you use the Danzenbaker brood-chamber and frames or regular Hoffman hive-body? No doubt the Hoffman frames are easiest to remove from the hive. Would you advise me to use the Protection hive or plain single-walled hive and make the packing boxes instead for them? The difference in price of hives will buy lumber for making packing boxes, I believe.

2. Do the plain 4x5x1⅜ inch sections when filled in good shape, weigh net 16 ounces? Would you advise using the 1½-inch section for full 16 ounces net weight in honey? Can I get as good results from this section as from 4¼x4¼x1⅞ inch beeway sections?

3. Would it be best to use an extracting frame on each outside row of supers or will this attract the queen up into the super?

MICHIGAN.

ANSWERS.—1. Unless I am greatly mistaken there is no Hoffman hive-body, although Hoffman frames are used in dovetailed hives, and a dovetailed hive is nothing but a Langstroth hive with dovetailed corners. The Hoffman frame has been so changed that not much of the Hoffman is left to it. It, again, is only one form of the Langstroth frame. I use dovetailed hives with Miller frames, and Miller frames are Langstroth frames with common single nails for spacers. You are right that the Hoffman frames as now made are easier to remove than the Danzenbaker, because the point of attachment is less, and it is still less in the Miller frame.

Like enough you would be just as well suited with the single walled hive.

2. There is no size of section that can be relied on to contain a net weight of 16 ounces at all times. The seasons vary, and there will be variation in colonies, and even in the same colony in the same season all will not be alike. After trying different kinds on a considerable scale, I prefer the 4¼x4¼x1⅞. In this I think I am not different from the majority.

3. If your supers are such that you can use an extracting comb each side of the sections, there will be less trouble with unfinished sections, although possibly a little more danger of trouble from the queen going up. But I am not sure of the latter from experience.

Transferring—Queens Mating—Long Tongued Bees

1. If there is a colony of bees under the weather-boards of a house and I wish to put them in a hive, would the queen go into the hive if I use a Porter bee-escape?

2 If there is a colony of bees in a log or box hive, would it be all right to put a hive on top of it and drive the queen with some of the bees up into the hive and put a queen excluder between until the brood below is hatched to save the brood.

3 My hives have about an inch space between the frames and cover. Would you prefer blankets on top of the frames or not?

4 How far is a drone likely to come to mate with a queen? Will queens be likely to meet a drone from a small apiary a mile away?

5. What is the best thing to do with a colony that is being robbed, if I wish to save it?

6. Would it be all right to kill all drones of inferior colonies at all times?

7. Will the long-tongued bees do as well as the common bees when there is no red clover?

8. Where can I get long-tongued Italian queens?

9. If I were in a great hurry would you answer my questions by return mail if I send about 15 cents for extra trouble?

ILLINOIS.

ANSWERS.—1. If the colony should swarm the queen would go out through an escape, but not at any other time unless smoke or something of the kind were used strong enough to drive all the bees out. [Even then it would be doubtful.—EDITOR.]

2. Yes, but it will be a gain if you have in the hive above a frame of brood, or at least an old brood-comb.

3. Yes, for with as much as one inch of room the bees will be pretty sure to make trouble building comb in the space if there is nothing to prevent

4. Likely there is possibility of mixing with apiaries five miles apart, although the chance is very little. Some think that queens hardly go more than a half mile away to mate. There would be considerable chance of mixing with a small apiary a mile away.

5. Contract the entrance, pile up hay to the top of the hive and keep it drenched with water. Or take the hive down cellar and return about dark on a succeeding day

6. Yes.

7. Yes, so far as I know.

8. I am not sure that any are being offered nowadays. Long-tongued bees are not a persistent race.

9. No; if there were no other reason against answering by mail, a sufficient one is that in that case only one person would be benefited, while in print many may benefit.

Beekeepers' Association—Price of Honey

1. I have seen in the American Bee Journal that it is to the advantage of every beekeeper to join some bee association, to enable him to receive better prices for his honey, and also to be posted on the market, but as I am so far away from any such organization I would like to have advice, if any, on what association to join?

2. Owing to the fact that everything is going up in prices, what would you suggest setting my price of honey at? I have been selling the same at 10 cents per pound.

ARKANSAS.

ANSWERS.—1. I am not certain where is the beekeepers' association nearest you, but as you are in the State of Arkansas it may be that the Arkansas Beekeepers' Association might suit you. On page 169 of this Journal for May you will see notice of its meeting May 12 at Nickerson, Kan. The secretary is J. L. Pelham, but unfortunately I cannot give his address.—[Mr. Pelham's address in Hutchinson, Kan.—EDITOR.]

2. It is not easy to say what you should get for your honey without knowing anything about what it is like, but on general principles one would suppose there should be an advance of at least three cents a pound. Indeed, if you have been retailing to the consumer at 10 cents a pound, he hardly ought to complain at 15 cents a pound.

Bees Killing a New Queen—Queen-Cells

1. While perusing over some bee clippings, I met with one stating that it is quite liable that one may seem perfectly successful about the introduction of a queen, eggs are laid, etc., when, after two or three weeks the bees kill the queen, apparently after she has done enough to enable them to rear a queen of their own. What do you think of this? Is there any way to prevent it?

2. Suppose a colony has a lot of queen-cells of which quite a number are capped, and if one removes every frame having any cells, and leaves them but a frame of brood or eggs and fills up the space with frames of full foundation, would swarming be forestalled? By being a close watcher as to this, one might secure a lot of desirable queen cells from any good colony.

PENNSYLVANIA.

ANSWERS.—1. Yes, that sort of thing sometimes happens. I am glad to say it has not been a frequent thing with me, and sorry to say I know of no way to prevent it.

2. Yes, if you take away all but one brood, all idea of swarming will be given up for the time, generally for the season, cells or no cells. You see it's practically shaking a swarm. But in watching in this way for mature cells, you must keep in mind that a colony is likely to swarm as soon as the first queen-cell is sealed.

Foulbrood

1. Are the bees of a young queen more apt to sting than those of an old queen?

2 What time in the spring is foulbrood most likely to appear?

3 Is there any way of getting rid of American foulbrood other than of destroying the whole colony?

TENNESSEE.

ANSWERS.—1. I don't believe there is any difference.

2 In cases where the disease was in the hive the previous season, you may find the signs in the brood about as soon as the combs are well filled with brood. When it appears in a colony for the first time, it may appear at any time throughout the active season.

3. Oh, yes; the bees and the hive are generally saved; the combs are melted and the wax saved, and some think it worth while to save the frames. Indeed, total destruction is seldom resorted to unless it be the first attack, and only one or two colonies in the apiary are affected.

Poisonous Honey

I have been told that bees gather nectar from certain plants, which causes the honey to be poisonous. Is this the case, and if so, what are the plants?

NEW YORK.

ANSWER.—There is an ancient story about an army of soldiers being poisoned with honey, and there have been reports of a certain plant down South yielding poisonous honey, but I don't know whether there's anything in it.

When to Put on Supers

1. When is the best time to put on supers, before swarming or after?

2. When the weather is warm the bees are all over the front of the hive. What is the cause?

MISSOURI.

ANSWERS.—1. The time to put on supers is a little before the bees are storing honey so fast that there isn't room for it in the brood-chamber. An old rule was to give supers as soon as the bees begin to put bits of white wax on the top-bars or upper parts of the comb. It is better to act a little before that.

You probably have white clover in your region, and it is a good plan to give supers as soon as you see the very first clover in bloom. That, you see, will generally be before swarming. Better give supers a week too soon than a day too late.

2. It probably means lack of room, lack of shade, and insufficient ventilation.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

Phelps' Golden Italian Queens will please you.

Fulmer's Gray Caucasian queens are winners; also by frame and pound.

Wanted to buy a foundation making outfit.
W. D. Soper, Jackson, Mich.

Bees and Queens from my New Jersey apiary.
J. H. M. Cook,
1Atf 84 Cortland St., New York City.

Warranted queens from one of Dr. Miller's breeders, 50c each.
Geo. A. Hummer & Sons, Prairie Point, Miss.

Tested leather-colored queens, $2 00; after June 1, $1 50; untested, $1 00; $10 per dozen.
A. W. Yates, 3 Chapman St., Hartford, Conn.

Place your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens.
John W. Pharr,
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Phelps' Golden Italian Bees are hustlers

Vigorous prolific Italian queens $1 00; 6, $5.00, June 1st. My circular gives best methods of introduction.
A. V. Small,
2303 Agency Road, St. Joseph, Mo.

Three-Banded Italians—One, 75c; six, $4.00; twelve, $7 50. Tested, one, $1.00; six, $5.70; twelve, $10 75.
Cotton Belt Apiaries,
Box 83, Roxton, Tex.

For Sale—Bright Italian queens, 65 cts. each; $6.50 per doz. Ready now; safe arrival and satisfaction guaranteed.
T J. Talley, Rt. 3, Greenville, Ala.

For Sale—12 swarms Italian bees in Root 10-frame Buckeye and standard hives. Also supers, extractor and supplies. Ask for list and photo. Fay McFadden, Granville, N. Y.

My Bright Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

Golden Italian Queens, no better honey gatherers anywhere at any price. Untested, $1.00. Tested, $2.00.
Wallace R. Beaver,
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Italian Queens from the E. E. Mott's strain of bees. Unt., 75c each; $8.00 per doz. Safe delivery guaranteed.
Earl E. Mott, Glenwood, Mich.

Chas Israel Bros. Co., 486 Canal St., New York. Established 1878. We are in the market for Extracted Honey. Send prices delivered New York. State the quantities you have and how packed and send samples.

Rhode Island Queens, Italian, Carniolan, Caucasian and Banats. Tested in May, $2.00. Untested, $1.50. Full colonies and bees by the pound. Send for circular.
Edwin Tuttle, Woonsocket, R. I.

Goldens that are true to name. One race only. Unt. 75c each; 6, $4.25; 12, $8 00. For larger lots write for prices. Tested, $1 50. Sel. test, $2.00. Breeders, $5.00 and $10
Garden City Apiaries, San Jose, Calif

For Sale—Golden untested queen, $1.00; 6 for $5.00. For quantities, write me. Satisfaction guaranteed.
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Finest Italian Queens from June 1st to Nov. 1st. $1.00 each; 6 for $5 00 My circular gives good methods. Ask for one.
J. W. Romberger, 3113 Locust St., St. Joe, Mo.

Head your colonies with some of our vigorous young three banded Italian queens. Untested, June 1, $1.00; per doz., $9 00; nuclei and full colonies. Satisfaction guaranteed.
A. E. Crandall & Son, Berlin, Conn.

Well Bred 3 banded Italian queens Unt. 85; 6, $4 50; 12, $8.00. Tested, $1.25; 6, $7 00; 12-$13. Queens mailed in new style introducing cage. Write for price list on queens, nuclei and full colonies. No disease.
J. F. Diemer, Rt. 3, Liberty, Mo.

For Sale—Three-banded Italian queens from the best honey gathering strains obtainable. Untested queens, $1 00; 6 $5 00; 12, $9 00. Tested queens, $1.50 each; 6, $8.00.
Robt. B. Spicer, Wharton, N. J.

Queens—3-banded Italians. Bred strictly for business. Untested, 60c. Tested, $1.00. Safe arrival and satisfaction guaranteed or money refunded. Sinking Creek Apiaries,
Gimlet, Ky.

For Sale in their season Italian queens, bees and honey. For prices on bees and queens send for circular, or see our large add in May or June issue.
H. G. Quirin, Bellevue, Ohio.

To Inquirers:—I sell no queens directly but have an arrangement with the Stover Apiaries, Starkville, Miss., which I keep supplied with best breeders, and they can supply you with my stock.
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Golden Italian Queens by June 1st. Untested, 75c, or six for $4.25; doz., $8.00. Select untested, $1.00. Tested, $1.25; six for $7.00. Breeders, $5.00. Pure mating guaranteed. Send for circular.
J. I. Danielson,
Fairfield, Iowa.

Queens of Quality—Our Hand-Moore strain of three-banded Italians are beautiful, and good honey gatherers. Bred strictly for business. Untested, 75c; half doz., $4.00. Select, $1.00,
W A. Latshaw Co.,
Clarion, Mich.

Golden Italian queens that produce golden bees very gentle to handle; good honey gatherers; no foulbrood. Select test. $1.25. Tested, 65c; 6, $3 75; 12, $7.00. No nuclei or bees for sale.
D. T. Gaster,
Rt. 2, Randleman, N. C.

Golden Italian Queens bred strictly for business that produce a strong race of honey gatherers. Unt., each, 75c; 6, $4.25; 12, $8.00. For larger lots write for prices. Tested each, $1.50. Prompt service and satisfaction guaranteed.
L. J Dunn,
59 Broadway Ave., San Jose, Calif.

Golden Queens that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

Good Italian Queens—Tested, $1.00; untested, 75c. One-pound packages with untested queen, $2 25; 2-lb. package, $3.25. One-pound package with tested queen, $2 50; 2-lb. package, $3 50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4.00. With tested queen, 2-frame, $3.50; 3-frame, $4 25. We can please you.
G. W. Moon
1904 Park Ave., Little Rock, Ark.

Clover Queens, pure Italian, untested, 75c. Tested, $1 50. Special prices on bees by pound and nuclei in July, $1.50 per pound and $1 25 per frame. Add price of queen. No disease. Satisfaction and safe delivery guaranteed. J. F. Coyle, Rt. 27, Penfield, Ill.

Gray Caucasians, an exceptionally vigorous, prolific, long lived race. Early breeders, gentle, and best of honey gatherers. Untested, $1.00. Select unt., $1.25. Tested, $2 00. Select tested, $2.50. Improved northern bred Italian queens as good as the best at same prices. Ask for circular. F. L. Barber, The Queen Breeder, Lowville, Lewis Co., N. Y.

Golden Italian Queens from a breeder that was 1st premium winner at Ill. State Fair in 1916. Untested, 75c; six for $4.25; 12 for $8.00. Select untested, one, $1.00; 6, $5.00; 12, $9.00. Tested, $1.50; 6, $8.00.
A O. Heinzel, Rt. 3, Lincoln, Ill.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10.
C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

Golden Italian queens of the quality you need. Bred strictly to produce Golden bees that get the honey. One, 75c; 6, $4.25; 12, $8.25; 50 or more, 60c each. Prompt delivery and satisfaction guaranteed.
L. J. Pfeiffer, Rt. A, Bx. 210, Los Gatos, Calif.

For Sale—Three-band Italian bees and queens; bred from the best honey gathering strains obtainable. Untested queens, 75c; 6, $4 25; 12, $8.00. Tested queens, $1.50 each. For queens in large quantities and bees by the pound write for prices.
Robt. B. Spicer, Wharton, N. J.

I Am Now prepared to supply you with Golden 3-banded and Carniolan queens. Give me a trial and be pleased. Tested, each, $1.00; 12 or more, 85c each. Untested, 75c each; 12 or more, 65c each. Ten percent discount on orders booked 30 days before shipment. No credit; no c. o. d. shipments.
I. N. Bankston, Eagle Ford, Tex.

HONEY LABELS

Honey Labels that will tempt the consumer to buy your honey. Neat, attractive labels at right prices. Samples free.
Liberty Pub.Co., Sta.D. Box 4 H, Cleveland, O.

Honey Labels.—We have just issued a new and up-to-date catalog of honey labels and stationery. Write for your copy. Neat labels and quick delivery guaranteed.
American Bee Journal, Hamilton, Ill.

HONEY AND BEESWAX

Wanted—Comb, extracted honey, and beeswax.
R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

Wanted—Beeswax at all times in any quantity, for cash or in exchange for supplies.
Dadant & Sons, Hamilton, Ill.

Wanted to Buy a quantity of dark and amber honey for baking purposes.
A. G. Woodman Co., Grand Rapids, Mich.

For Sale to the highest bidder a limited quantity of Michigan's best white extracted honey, in 60-pound tins.
A. G. Woodman, Co., Grand Rapids, Mich.

Wanted—White and light amber extracted honey in any quantity. White clover and raspberry preferred.
I. J. Stringham,
105 Park Place, N. Y.

Comb Honey our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

To Sell or exchange for bees or hives extra fine red or yellow Carneau Pigeons, Lafrauiere stock; breeders of very large squabs Write Isabella E Jewell, Vineland, N. J.

Wanted — Extracted light and amber honey. Send sample with the lowest cash price. Can use clean beeswax also.
D. H. Welch, Racine, Wis.

Wanted—Carload or less extracted honey State price and quantity. If needed we can supply tins or barrels for crop.
Hoffman & Hauck, Richmond Hill, N. Y.

Wanted—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J Angus, Grand Haven, Mich.

For Sale—Raspberry, basswood, No. 1 white comb, $3.00 per case; fancy, $3.25; 24 Danz sections to case; extracted, 120-lb. cases, 15c per lb.
W. A. Latshaw Co.,
Clarion, Mich

400 Pounds Extracted Honey in Two Years, such is the record of the colony of my breeding queen. Unt 75c each; six, $4.25; 12, $8.00. 3-band Italians only. Circular free.
J. I. Banks, Dowelltown, Tenn.

Wanted—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

Wanted—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

Honey Wanted—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

For Sale—Famous Root's, Moore's, Davis' extra select strain of honey gatherers. Mated with Geo. B. Howe's select drones; unsurpassed for honey gathering, gentleness and disease resisting. Most all leading beekeepers say no better bees than 3-band Italians. See my large ad in May issue.
Untested, 1, 75c; doz., $8.00; ½ doz., $4.00. Select untested, 1, $1.00; doz., $8.50; ½ doz., $4.50. Tested, 1, $1.25. Select tested, 1, $1.50. Extra select tested, 1, $2.00. Breeders, $5.00. Bees with queen, per lb., $2.50; 6 lbs., $12; 12 lbs., $20. Try my bees and queens.
H. B. Murray, Liberty, N. C.

Golden 3 Band Italian and Carniolan queens: Virgin, one, 50c; 6, $2.50; 12, $4.00; 100, $25. Untested, one, 75c, 6, $4.20; 12, $7.80; 100, $60. Select untested, one, 85c; 6, $4.80; 12, $9.00; 100, $70. Tested, one, $1.00; 6, $5.40; 12, $10.20; 100, $80. Select tested, one, $1.25, 12, $13.80; 100, $100. Breeders, $3.00 each.
Bees in packages without combs: ½-lb., 75c; 1-lb., $1.25; 2-lb., $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2.25; 3 frames, $3.00. Add price of queens wanted. We guarantee safe arrival and no disease.
C. B. Bankston, Buffalo, Tex.

SUPPLIES.

For Sale—New 165-lb. honey kegs at 65c each, f. o. b. factory.
N. L. Stevens, Venice Center, N. Y.

For Sale—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

Bee-Keeper, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

One Root Hatch wax press, never used. Also 44 gauge shot gun good as new. $5.00 for press and $4.00 for gun. Both bargains.
W. S. Pangburn, Center Junction, Iowa.

For Sale—40 new hives, never used, Dadant make, dovetailed, one or two story, nailed and painted. 20 percent off regular price. Also some used hives and supers at a bargain. Write quick.
W. B. Davis Co., Aurora, Ill.

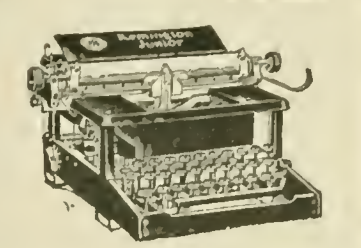
MISCELLANEOUS

25 Ladies' Coots, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

For Sale—43 acres in Delta Co., Colo., 9 acres in full bearing orchard that will have a heavy crop of apples, 4½ acres in alfalfa. First crop will be ready to cut in 20 days. More land to clear. Excellent water right; new 6 room house, cistern, etc. A very good bee country. Will sell with stock and bees or without. For particulars write to
J. M. Schraft, Austin, Colo.

WANTED

Wanted—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Illl.



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It sells for $50. It is sold either for cash or on easy payments—$5 down and $5 a month.
We will send it on ten days' examination to any address within the first and second parcel post zones of any Remington branch office. If you decide not to keep it, return within ten days—no obligation involved.

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Remington Typewriter Company,
(Incorporated)
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Send me a Remington Junior Typewriter, price $40, on free examination. It is understood that I may return the machine, if I choose within ten days. If I decide to purchase it, I agree to pay for it in 10 monthly payments of $5 each.

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Our Bees are Gentle

Nope, you won't get stung if you buy queens from us. Our bees are the hardy, leather colored, showing from three to five yellow bands. We have many letters testifying to their wintering and honey getting qualities.

Price $1.00 each; $9.00 per dozen; $70 per hundred.

Send for our complete price list and booklet describing our high-grade Italian bees.

JAY SMITH
1159 DeWolfe St.,
Vincennes, Ind.

The Eastern New York Beekeepers Association will hold a field day and basket picnic, under the old elm tree, at the apiary of the President, W. D. Wright, Altamont, N. Y., on Wednesday, July 25, at 10 o'clock, a.m. A cordial invitation is extended to all who, are interested: bring your families.
S. Davenport, *Secretary*.
Indian Fields, N. Y.

Practical Bee Guide, by J. G. Digges.—Any one who wishes to become acquainted with the manner and methods of beekeeping in the old country, and in Ireland particularly, ought to read this book. Price, $1.00, postpaid, or with the American Bee Journal for one year, $1.75.

British Beekeeper's Guide Book was written by Thos. Wm. Cowan, England's foremost bee writer. He has condensed the work as much as possible. It is well bound and illustrated; contains 180 pages. Price, postpaid, $1.00.

ENERGETIC Honey Gatherers

Best 3-banded Italian bees and queens. Untested, 75c; tested, $1.25. Bees $1.25 per pound. All orders filled promptly or your money refunded. Safe delivery guaranteed.
GILA VALLEY APIARIES
Duncan, Arizona

MOTT'S NORTHERN-BRED ITALIAN QUEENS

that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans on "How to Introduce Queens and Increase," 25 cents. List free.
E. E. MOTT, Glenwood, Mich.

Crop Reports and Market Conditions

OUR CROP REPORTS AND MARKET CONDITIONS

In our last circular letter to reporters the following questions were asked:

1. Conditions of honey plants compared to 1916?
2. How is the honey flow?
3. Honey movements and prices. Is there any demand from consumers direct? Is there any demand from big buyers and what prices are they offering? Also, is any honey being sold or contracted, and at what price?
4. What do you expect to realize for your honey, wholesale and retail?

HONEY PLANT CONDITIONS

In the New England States the clover is in excellent shape though two weeks late. There is any way from 75 to 100% as much in evidence as last year. Some parts of New York report much less, while Pennsylvania seems to have about as much as last year. In the extreme southeast the spring crop has been harvested. Prospects for the summer flow are only fair. Sweet Clover is very backward.

Throughout the central west the season is anywhere from ten days to two weeks behind. Ohio reports three-fourths as much clover as last year, Minnesota expects a bumper crop, Wisconsin and Michigan have average prospects. Illinois and Iowa generally expect very little clover honey, if any at all. Missouri seems to have a little better prospect, as do Kansas and Nebraska. The excessive rains in this section, however, have brought out the young clover and the prospects for a late fall flow are good, with favorable weather.

In Texas for the most part the season is and will be a failure. Practically no honey was harvested from the early flowers, and some sections report no prospects for the summer.

The whole west, including California, reports at least conditions up to last year, and many parts of California expect a much larger crop than in 1916. The condition in Idaho is much improved over 1916, when the crop was almost a failure.

THE HONEY FLOW

There has naturally been no honey flow to speak of in the northern half of the country. Clover is late and probably will not yield to maximum till the time this journal is in the hands of readers. Florida and Georgia report a very good early flow, probably better than last year, and the early flow in California has been good, with the bees likely in a little more backward condition to harvest the early crop.

HONEY MOVEMENTS AND PRICES

Southern new crop honey has brought 9 to 10 cents per pound f. o. b. shipping points in barrels, and the entire crop has been disposed of, most of it going to the New York markets.

The orange honey of California is all cleaned up. One commission firm in Chicago was offering a carload at 14c for extracted f. o. b.

Big buyers are still very active, and in most cases are offering larger prices, although one report from Minnesota is that honey is being offered on at 8 cents for white clover. In no year has there been, probably, such a varying price offered for good extracted honey. Some still report offers of 7 to 8 cents for best extracted, while some of the larger producers have sold at as high a figure as 10 cents, one being offered and refusing 9¼ cents in Wyoming for all the honey he could get.

The demand for export is still strong, with a doubt as to whether foreign buyers would be able to pick up as much as they desire at figures which they deem reasonable. One order was placed for water white honey at about 12 cents per pound f. o. b. New York, with the direct stipulation that the seller was to arrange for ship space to England. This protected the foreign buyer in case shipping conditions got in such shape that space could not be secured.

Comb honey seems not to be even considered up to the present, and many predict that it would not be surprising to see extracted honey sell for as high a price as comb before the year is ended.

The shortage of tin cans is going to mean that a great deal of honey will have to be marketed in barrels where formerly it went in 5 gallon cans.

PRICES PRODUCERS EXPECT

A great many have already contracted for their 1917 crop at prices ranging from 6¾ to 10 cents per pound. Most of those still holding off to sell when the honey is in hand expect to realize at least 10 cents per pound in jobbing lots. One said he would "give his white clover honey to the poor rather than to sell it for less than 11 cents." Many expect at least 12½ cents for extracted white in car lots.

There is no doubt but that the demand is excessive both in a jobbing way and locally for this time of year. Many report that they are having requests for honey from consumers direct that they cannot fill before the crop is harvested.

Two large honey sellers who deal direct with consumers expect to set their prices with a minimum as follows:

Five pound cans	$1.25 each
Ten pound cans	2.00 each
Sixty pounds	9.00

Of all years this is the year to push up the local sales on honey. Sixty pound cans for shipment can hardly be gotten, while the smaller friction top pails are still obtainable.

HONEY AND BEESWAX

CHICAGO, June 18.—As yet, none of the yield of 1917 has appeared on this market. As stated in former reports, there is no honey to be had among the jobbers, and very little is left in the hands of retailers; hence, there is a probability of higher prices on the new crop when it comes, and we should have some by the time this appears in print.

We expect now to get 17@18c per pound for the comb that will range from No. 1 to fancy and it may be that we can get a little more for a time. Extracted is commanding at the time from 12@14c per pound, for the reason that there is practically none offered in clover or the other white honey. Amber grades are also absent, including buckwheat. Beeswax is steady around 35c per pound.

R. A. BURNETT & CO.

LOS ANGELES, June 14.—Owing to unfavorable weather conditions the honey producing season is some six weeks later than usual; therefore, the lateness in submitting quotations. This condition very materially shortens the honey flow or producing period and prospects are that the production will be short, especially on certain grades, viz: orange and sage honey. The unprecedented demand for honey with absolutely no carry-over stocks, together with the crop conditions that prevail, has caused a steadily advancing market which is firm at today's quotations which are as follows: Fancy white orange 15c; fancy white sage 15c; light amber sage, 11¾c; light amber alfalfa, 10½-10¾c.

HAMILTON & MENDERSON.

KANSAS CITY, MO., June 15.—Comb honey is about cleaned up on this market, and there is very little extracted except what is in the hands of the jobbers, and stocks are very light with them. The market here ranges from 10@14c a pound, according to quality and kind. The demand for extracted honey is limited, on account of the high prices.

C. C. CLEMONS PRODUCE COMPANY.

DENVER, June 20.—This market is cleaned out of both comb and extracted honey, and therefore have no prices to quote.

For clean yellow beeswax we pay 38c in cash and 40c in trade, delivered here.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Magr.*

NEW YORK, June 18.—Regarding the condition of the honey market, so far as comb honey is concerned, old crop is fairly well cleaned up, with the exception of lower grades, of which there is still some in the market, but no demand to speak of. As to No. 1 or fancy white, there is some which has been carried over, but the demand is not as good as it formerly was, and hard to find buyers, at around 13@14c, and this in a small way only.

As to extracted honey, the market appears to be in a very unsettled condition, and all kinds of prices are being quoted. Last year's crop is practically cleaned up, so far as we know, and receipts from the West Indies have been rather light of late, but it appears that a good crop has been produced in the Southern States, and is now beginning to arrive quite freely. The demand is fair, at prices varying from 90c to $1.20 per gallon, according to quality.

HILDRETH & SEGELKEN.

SAN ANTONIO, June 18.—Very little honey of any kind has been marketed in Texas. Never was there such a failure in the spring crop. Summer surplus, with fair to normal prospects, will appear about July 1. Extracted is being contracted at 10c amber to 13c white bases. Bulk comb 12@15c. Comb none quoted. Beeswax is in great demand at 35c cash, 38c exchange basis.

SOUTHWESTERN BEE CO.

ENLIST

In the growing army of honey-producers who are preparing to do their bit for Uncle Sam and the Allies, by endeavoring to secure a bigger crop of honey than ever before.

Prospects are bright for a bumper yield. Are you ready for it? Don't wait for prices to soar again, but place your orders now.

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Medina, Ohio

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal.

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subsciption price postpaid.

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Sample copy sent free on request.

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Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00.

Biggle Bee Book.—This is a very small cloth-bound, well gotten up book. Its size is 4x5½ inches, and it was designed to be carried in the pocket of the amateur beekeeper. It contains concise information regarding the best practice in bee culture. Price, by mail, 50 cents, or with the American Bee Journal one year, $1.35.

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TOLEDO

Is the place to order your 1917 supplies from, and GRIGGS is waiting for your order

We are well supplied with a fine stock of Root's Goods for the following season; and if a saving of time and money means anything to you, Mr. Beeman, wherever you are, don't overlook getting our catalog and prices.

Promptness and satisfaction is our motto, whether you have one hive or 500.

HONEY and Beeswax always wanted. Special price list on bees and queens, also Poultry Feeds, mailed with catalogs.

S. J. GRIGGS & CO.
Dept. 24 Toledo, Ohio
"Griggs Saves You Freight"

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50 Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Point Pleasant, Pa.

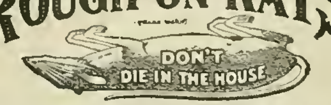
EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1.00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
Loreauville, Louisiana

"Always Does the Work and Does It Right"

ROUGH ON RATS



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It Can't Fail—It's All Exterminator
Stop Fattening Rats, Mice & Bugs!
On your food or on Catch Penny ready-to-use substitutes—whose bulk is inert flour and grease
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END THEM ALL TO-NIGHT WITH a 25c box of ROUGH ON RATS
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20 Years of Select Breeding Gives Us Queens of Highest Quality
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"There are few queens their equal and none better"

What Bees Do Headed By Our Queens

"One swarm made 185 sections of honey and another 296 sections. I am well pleased."—MELVIN WYSONG, Kimmell, Ind.

"Your bees averaged 150 pounds of surplus honey each. I find them not only hustlers but gentle."—FRED H. MAY, Meredosia, Ill.

"I have tried queens from several different places and like yours best of all."—C. O. BOARD, Alabama, N. Y.

"We are only one mile from Lake Erie and exposed to high cold winds; in fact, this is the windiest place along the great lakes. Your bees were able to stand the winter with only an insignificant loss, and we would have no others. As for honey they averaged 175 pounds of extracted surplus, did not swarm, and gave an artificial increase of 30 percent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs." Name furnished on request. North East, Pa.

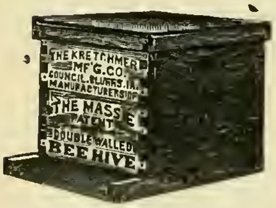
Price List of Golden and 3-Banded Italian Queens by Return Mail

Untested	50c each	$45 per 100	Tested	$1.00 each,	$ 90 per 100
Select untested	65c	" 50 per 100	Select tested	1 25 "	110 per 100

We guarantee safe arrival of all Queens—that they are very resistant to European Foulbrood, and, in fact, will give complete satisfaction. Wings clipped free of charge. Our capacity is 1500 Queens monthly

M. C. BERRY & COMPANY, Hayneville, Alabama, U.S.A.

The Double-Walled Massie Bee-Hive



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For Comb or Extrected Honey

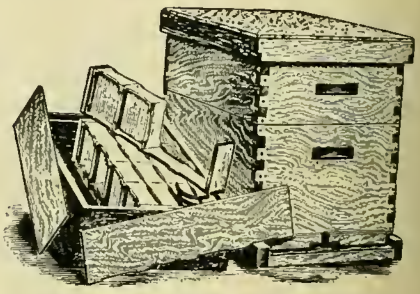
Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



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Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

Quality Service System

BUY MARCHANT'S QUEENS AND GET RESULTS—RE-QUEEN NOW

We have in operation over 1000 nuclei. We are prepared to take care of your orders, both LARGE AND SMALL. Our queenbusiness for the past two months has been larger than ever before. Why? Because our stock gives results. We are offering queens at the following prices for JUNE, JULY, AUGUST AND SEPTEMBER:

	1	6	12	25	50	100
Untested	$1.00	$ 5.00	$ 9.00	$16.00	$30 00	$52.00
Tested	1 50	8.00	15.00	Breeding queens,		$ 5.00
Select tested	2.00	10.00	18.00	Sel. breeding queens,		10 00

Never before has this strain of bees been put on the market at such a low price. Take advantage and requeen your yard with the best strain on the market.

J. E. MARCHANT BEE & HONEY CO.
Columbus, Georgia, U. S. A.

(The home of the southern honeybee.)

QUEENS of MOORE'S STRAIN of ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, $1 00; 6, $5.00; 12, $9 00
Select untested, $1.25; 6, $6.00; 12, $11 00
Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE
Queen-breeder Rt. 1, Morgan Ky.

Southern Beekeepers

Get the famous Root goods here; veils, 65c; smoker, 90c; gloves, 65c; wire imbedder, 35c; honey knife, 80c; 1-lb. spool wire, 35c; medium brood foundation, 1 to 11 lbs., 58c per lb.; 11 to 25 lbs., 56c; 50 or 100 lb. lots, 53c; 10-fr. wood zinc excluders, 50c each. Hoffman frames, 3 75 per 100. Honey extractors for sale. I am paying 28c cash and 29c in trade for wax.

J. F. ARCHDEKIN, Bordelonville, La.

MARSHFIELD GOODS

BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

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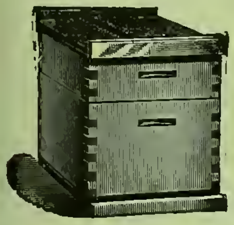

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Because it is the same TASTE, and the same SMELL, and the same FIRMNESS, as the COMB the Honey-bees make themselves. It is the more acceptable to them because it is not like their OWN COMB.

Remember, Mr. Beekeeper, that to you HONEY IS MONEY—then use

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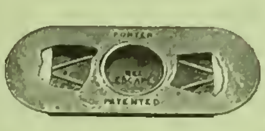
Work for a full-capacity honey crop

Send for Samples—All Supplies at Prices you Appreciate

GUS DITTMER COMPANY, Augusta, Wisconsin

PORTER BEE ESCAPE SAVES HONEY TIME MONEY



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Please mention Am. Bee Journal when writing.

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Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1 00 each; doz. $9.00. Choice tested. $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

A BEEKEEPER'S LETTER, DATED MAY, 1917:

". . . . . .a large dealer in the south recently told me that many beekeepers are asking for cypress hives and saying that they do not want anything else. This is so often the case that nearly all the supply dealers are now listing cypress as well as. . . . . . .

I recently bought several hundred dollars worth of hives for my personal use from a firm which has never offered anything in cypress. I insisted on cypress bottoms and they had to be made especially to fill my order. I feel very sure that the use of cypress for bee hives, hive bottoms and hive stands will very largely increase as beekeepers learn more of the non-rot qualities of the all-heart wood of this species, which should be specified in all cases.

Trusting that the above facts may be the means of saving you many future replacements, I am

Very truly yours,"
(Signed)

NOTE:—We omit the name of the competing wood rather than injure it.

GET A BOOK—IT IS FREE

There are 42 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't. Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for Building; Vol. 36 is the Carpentry Book' making easy a dozen hard jobs of carpentry; Vol. 19 is the Canoe and Boat Book; Vol. 37 is the Silo Book; Vol. 3 is the GREENHOUSE book. All are free for the asking. Suppose you ask for one or a dozen, right away

WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "All-round Helps Department."

SOUTHERN CYPRESS MFRS.' ASSOCIATION
1251 Hibernia Bank Bldg., New Orleans, La., or 1251 Heard Nat'l. Bank Bldg., Jacksonville, Fla.
For quick service address nearest office.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

WE ALWAYS BUY BEESWAX

When you have some ready to ship drop us a card and we will quote our best prices or ship at once and we will pay you our top price for it.

WE NEED TONS UPON TONS FOR MAKING

Dadant's Foundation

Considered by most progressive beekeepers to be the best foundation on earth.

HONEY

We are in the market for good grades of white and light amber extracted honey. Drop us a line stating how much you have and how packed. Also your prices f. o. b. your station.

DADANT & SONS,
HAMILTON, ILLINOIS.

[illegible] - 1917
[illegible] cultural
College

AMERICAN BEE JOURNAL

AUGUST, 1917

Nearly Every Walk of Life is Represented in Beekeeping. The Above is the Model Apiary of Dr. F. C. Smith Located at Keokuk, Iowa. There is no Trouble in Selling Honey at This Apiary. The Trade Demands More Than Can be Supplied.

"When we receive your Honey Return mail brings your Money"

The Fred W. Muth Co.

GET SERVICE LIKE THIS MAN

LAKE CITY, MICH., MAY 5th, 1917.

FRIEND MUTH —Your letter with check for $140 20 for wax has been received. Thanks. I do believe you beat them all when it comes to quick returns for goods shipped you. I may have some more wax to sell after we get our cappings melted.

Yours truly,

[SIGNED] ELMER HUTCHINSON.

We Want Immediately! Extracted Honey

We buy all grades of Extracted Honey. Large or small lots. Send sample and price. If price is right, we will buy. Partie who have Fancy and Number One Comb Honey write us at once. We will buy from 40 to 50 carloads this season.

BEESWAX

Send us your Beeswax. We pay highest market prices, and send you our check the same day shipment is received.

OLD COMBS

Make some spare money from the wax rendered from your old comb. We will render it, charging only 5 cents per pound for rendering, and pay you best market prices for the wax rendered.

Shipping Cases for Comb Honey

We are prepared to ship you the same day order is received any number of shipping cases. Several carloads are here now ready for buyers. Send your order in now before our supply is exhausted. We sell Lewis Beeware.

REMEMBER We remit the same day your shipment arrives. Read the letter above and be convinced that this is the house to send your shipments to. Try us.

THE FRED W. MUTH CO.

"The house the bees built"

204 Walnut St., Cincinnati, Ohio

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in June and July at the following prices, viz.:

FROM PENN. MISS.					FROM TORONTO, ONTARIO.			
Prices 1 and over	1	6	12	25 to 100	1	6	12	25 to 100
Untested	$ .85	$4 50	$8.00	$ .65 each	$1 00	$4 80	$ 9 25	$ .75 each
Warranted	1.10	5.00	9.50	.75 "	1.35	5.80	10.75	.85 "
Tested	1.50	7 50	13.50	1.05 "	1.75	7.80	14 75	1.15 "
Breeders	3.00 to $10.00 each.				3.00 to $10.00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

FROM PENN. MISS.				FROM TORONTO, ONTARIO		
	1 to 5 each	6 to 25 each	over each	1 to 5 each	6 to 25 each	50 over each
1-pound and Queen	$2.25	$2.00	$1.90	$3.00	$2.75	$2.65
2-pound and Queen	3.00	2 75	2.65	4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO, ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

BEES

If you are thinking of buying bees this spring, we would be pleased to hear from you. We furnish full and nucleus colonies, bees by the pound, and queens.

A strong colony of Italian bees with a tested Italian queen, in a new 8-frame dovetail hive, complete with super, for $11.00 Tested Italian queens, $1.50. Untested, $1.10.

Our catalog of bee supplies, honey jars, and everything a beekeeper uses, mailed upon request.

I. J. STRINGHAM

105 Park Place, New York

Home Apiary: Glen Cove, L. I.

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association

1424 Market Street, Denver, Colo.

BEE-SUPPLIES

Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.

Dept. S., Kansas City, Missouri

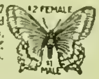
SELECT ITALIAN BEES

by the pound. Nuclei QUEENS. 1917 prices on request. Write,

J. B. HOLLOPETER, Rockton, Pa.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 2c stamp at once for prospectus.

SINCLAIR, Box 244, D 41, Los Angeles, Cal



Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois

PATENTED
WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.
G. W. Wright Company, Azusa, Calif.

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50 Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Point Pleasant, Pa.

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa

3-BANDED ITALIANS

From May 1 until June 1
Untested, $1 00; 6, $4.50; 12, $8 00. Tested, $1.25; 6, $5 50; 12, $10.50
From June 1 until Nov 1
Untested, 75c; 6, $4.00; 12, $7 50. Tested, $1.00; 6, $5.00, 12, $9.00. Select tested $2.00 each. Circular free.
JOHN G. MILLER
723 C St., Corpus Christi, Texas

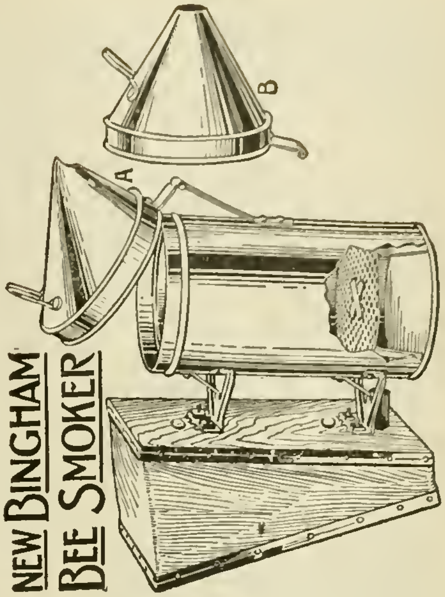
NEW BINGHAM BEE SMOKER

In 1878 the original direct draft bee smoker was invented and patented by Mr. T. F. Bingham, of Michigan. Mr. Bingham manufactured the Bingham Smoker and Bingham Honey Knife for nearly thirty-five years, and in 1912 becoming a very old man, we purchased this business and joined it to our established business of beekeepers' supplies and general beeware. Those who knew Mr. Bingham will join us in saying that he was one of the finest of men, and it gives us much pleasure to help perpetuate his name in the beekeeping industry.

Bingham Smokers have been improved from time to time, are now the finest on the market, and for nearly forty years have been the standard in this and many foreign countries. For sale by all dealers in bee supplies or direct from the manufacturers.

Smoke Engine, 4-inch stove....	28 oz	$1 25
Doctor, 3½ inch stove...........	26 oz.	85
Two larger sizes in copper extra		
Conqueror, 3-inch stove.........	23 oz.	.75
Little Wonder, 2½-inch stove..	16 oz	.50

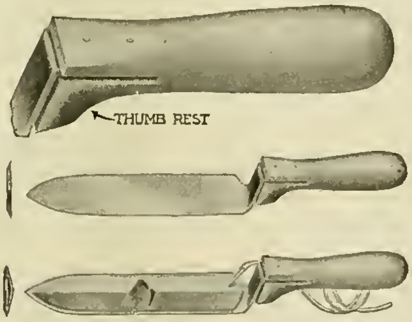
Hinged cover on the two larger sizes, postage extra.



A. G. WOODMAN CO., Grand Rapids, Michigan

Bingham Honey Uncapping Knives
With New Cold Handle

We are furnishing the same quality steel, best money can buy, thin-bladed knives that Mr. Bingham manufactured years ago. The old timers all remember these knives and many are writing in as Mr. Volstad in the following letters. The substitutes offered by others have not given the satisfaction desired.



Lyle, Minn., June 21, 1917.
A. G. Woodman Co.
Gentlemen: Have you the thin, good working uncapping knives we used to get about 20 years ago and that worked to perfection?
K. H. Volstad.

We sent an 8½ and 10-inch knife and received the following letter:

Lyle, Minn July 5, 1917.
A. G. Woodman Co.
Gentlemen: Knives received; glad you sent them at once. They are just what I want and have been looking for, but did not know where to get them.
K. H. Volstad.

Many of the most extensive honey producers insist on the Genuine Bingham Knives. Mr. N. E. France, of Platteville, Wis., gave us a fine unsolicited testimonial on the steam heated Bingham knife, too long for this space. Present prices are: 10-inch knives, 85 cents each; 8½-inch knives, 75 cents each. Steam heated knives, with tubing, $2.50 each. Postage extra.

A. G. WOODMAN CO., Grand Rapids, Mich.

TIN HONEY PACKAGES

The tin plate situation is becoming more serious from day to day and prices have taken a steady advance for the last year and a half. Prices still continue to advance slowly and at the present time it is almost unobtainable. We purchased enough tin plate for our bee smoker trade to last us a year or more, before the war was declared. It would be a hard matter for us to get it at any price now. Our three-year contract on tin honey packages is still being honored and runs to Jan. 1, 1919. Prices are adjusted every three months, but we are considerably under present market prices and are saving for carload buyers and others of smaller lots. Send us a list of your requirements and let us figure with you.

Friction Top Tins

	2-lb. Cans.	2½-lb. Cans.	3-lb. Cans.	5-lb. Pails.	10-lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. WOODMAN CO., Grand Rapids, Michigan

Dr. Miller's Thousand Answers

Postpaid $1.25

THE GUARANTEE THAT MADE "Falcon" Bee Supplies Possible

The "Falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "Falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "Falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "Falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

NOTICE

HONEY WANTED HONEY

Do not forget when your crop of honey is ready for sale to send us a sample, state your lowest price, and also how it is put up. We are in the market for unlimited quantities, and will pay cash on arrival. Let us hear from you before selling your crop.

C. H. W. Weber & Company

2146 Central Ave., - Cincinnati, Ohio

Tennessee-Bred Queens

45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$7.50	$13 50	$1.25	$6.50	$11.50	$1.00	$5.00	9.00	$ .75	$4.00	$ .75
Select Untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested	3.00	16.50	30 00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1 50; 2 fr., $2.15; 3 fr., $2.75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year

Select queen tested for breeding, $5.00

The very best queen tested for breeding, $10.00

JOHN M. DAVIS, SPRING HILL, TENN.

3-BAND ITALIAN QUEENS

Produce Workers

That fill the super quick with honey nice and thick. They have won a world wide reputation for honey gathering, hardiness and gentleness. Untested, 40c; 6, $2.25; 12, $4.00. Tested, 75c; 6, $4.00; 12, $7 50 We guarantee safe arrival and satisfaction.

S. D. CHEATHAM & CO.

Rt. 4, Greenville, Ala.

The apiaries for queens of dependable quality

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill.

GOLDEN ITALIAN QUEENS

Read a few reports of big yields from single colonies of this gentle strain of Goldens: H. E. Bartz, Keytesville Mo., 264 pounds of extracted honey; J. M. Buchanan, Franklin, Tenn, 250 pounds of extracted honey; L. C. McCarly Nampa, Idaho, 250 pounds of comb honey; Fred Dury, Unionville, Mo., 374 pounds of comb and extracted honey.

I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—*Prices of Queens*—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5 00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3 00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Select queen tested for breeding, $5.00. - The very best queen tested for breeding, $10.00

BEN G. DAVIS, Spring Hill, Tennessee

FOREHAND'S QUEENS

15 LBS. SURPLUS *Which Colony is Yours, Mr. Beekeeper?* **150 LBS. SURPLUS**

GET A GOOD QUEEN

One that will keep the hive chock-full of bees at all times, make the biggest yields of honey, stingless, and look the prettiest at a medium price. Over 25 years of select breeding has brought our queens up to a standard surpassed by none and superior of many. We have tried the principal races and every method known, and we have now selected the best of both, THE DOOLITTLE METHOD and the THREE-BAND BEES. Use the 3-Bands Why? Because they get results. The foremost bee-men of the world use them. Our queens are sold by many of the largest dealers in the United States.

Louis H. Scholl (one of the largest beekeepers of the Southwest) says; "Three-band Italians have proven the best all-round purpose bee after trying out nearly every race, not only in an experimental way while still at A. M. College, but in our own apiaries as well."—(*In Beekeepers' Item.*)

	1	6	12		1	6	12
Untested	$ 50	$ 3 00	$ 6.00	Tested	$1.50	$ 8 75	$17 00
Select untested	.75	4.25	8.00				

Write for prices on large quantities

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

TYPEWRITER SENSATION

$2.50 a Month Buys A Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.
H. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

QUEENS OF QUALITY

Capacity of my yards over 1000 Queens a month

After 20 years of careful selection and breeding, I now have a strain of bees that cannot be excelled by any. My queens are all bred from IMPORTED STOCK, the very best in the world for honey gathering and gentleness. They are not given to swarming. What more do you want in bees than the three above qualities?

GUARANTEE

You take no risk in buying my queens, for I guarantee every queen to reach you in first-class condition, to be purely mated and to give perfect satisfaction. All queens that do not give satisfaction I will replace. Send for circular.

	1	6	12
Untested	50c each.		
Select untested	.75	4 25	8.00
Tested	1.25	7.00	13.00
Select tested	2.00	11.00	20.00

If queens are wanted in large quantities, write for prices.

L. L. FOREHAND, Ft. Deposit, Alabama

TEXAS QUEENS

Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

GRANT ANDERSON
Rio Hondo, Texas

PAT. APPLIED FOR

C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Does the work in half the time. Has been tried and is guaranteed to do accurate work. Makes the frames ready in one handling. Price $6.50.

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1 00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
Loreauville, Louisiana

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917 list free.**

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

LEWIS BEEWARE

Is at your very door

Send to Your Nearest Lewis Distributer for

LEWIS HIVES

and

LEWIS SECTIONS

Hold to the "Beeware" Trade Mark

It is Your Safest Guide Post

BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. U S A
MAKES THE FINEST.

LEWIS DISTRIBUTERS:

California	—	Bishop,	W. A. Trickey,
Colorado	—	Denver,	Colorado Honey Producers' Ass'n.,
"	—	Delta,	Delta County Fruit Growers' Ass'n.,
"	—	Grand Junction,	Grand Junction Fruit Growers' Ass'n.,
"	—	Rifle,	C. B. Coffin,
Idaho	—	Caldwell,	Idaho-Oregon Honey Producers' Ass'n.,
Illinois	—	Hamilton,	Dadant & Sons,
Iowa	—	Davenport,	Louis Hanssen's Sons,
"	—	Sioux City,	Western Honey Producers' Ass'n.,
"	—	Emmetsburg,	H. J. Pfiffner,
Michigan	—	Grand Rapids,	A. G. Woodman Co.,
Montana	—	Fromberg,	B. F, Smith, Jr.,
New York	—	Newark,	Deroy Taylor Co.,
Ohio	—	Cincinnati,	Fred W. Muth Co.,
Oregon	—	Portland,	Chas. H. Lilly Co.,
Porto Rico	—	Ponce,	Prats & Vicens,
Tennessee	—	Memphis,	Otto Schwill & Co.,
Texas	—	San Antonio,	Texas Honey Producers,
Washington	—	Seattle,	Chas. H. Lilly Co.,
Wyoming	—	Wheatland,	Fred M. Harter,

G. B. LEWIS CO., Manufacturers, Watertown, Wis.

AMERICAN
BEE JOURNAL

Vol. LVII.—No. 8 HAMILTON, ILL., AUGUST, 1917, MONTHLY, 1.00 A YEAR

DEVELOPING THE HOME MARKET

Some Successful Plans of Stimulating the Local Demand for Honey, in Use by Well Known Beekeepers---By Frank C. Pellett

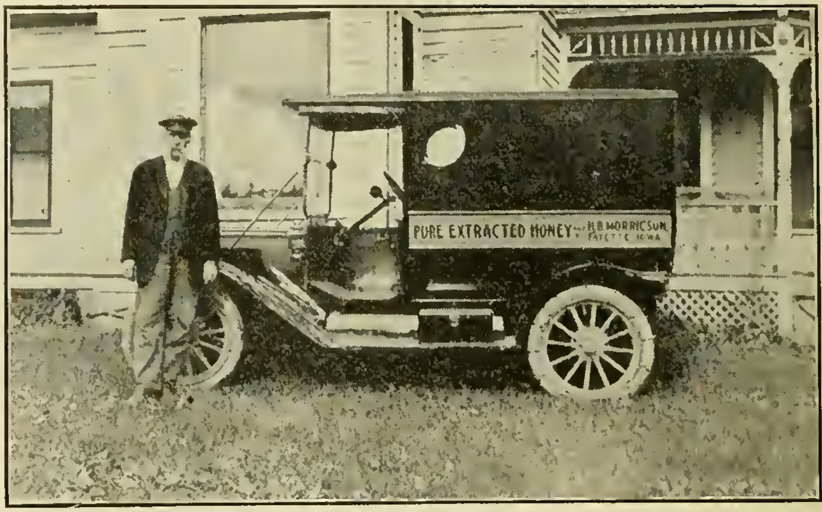
FEW beekeepers realize the possibilities of the local market. Those who do are often able by means of inexpensive advertising to develop a demand for far more honey than they can produce. They thus become buyers, and make a small margin by handling more or less honey in addition to their own crop. After visiting beekeepers in many states, I am more and more impressed with the fact that too many beekeepers are selling their own honey altogether too cheap. Men who should get a fair price often sell at retail at about the wholesale price. I have known men to advertise to sell the best extracted honey at ten cents a pound in any quantity, and to fill fruit jars, pails and other small containers at this price, at a time when large bottling concerns were offering as much in carlots. Until the producer learns to demand a reasonable price for his product, the business can never stand on a firm footing. The beekeeper who enquires what the wholesale price is and then proceeds to sell to his neighbors in small quantities at such a figure is doing all that is within his power to depress the market the following year. If we beekeepers sell our honey at retail at ten cents a pound, we can hardly expect bottlers to offer us more than five or six cents a pound in quantity. They have to pay freights, commissions, and other expenses from the difference between the price which they pay and that for which they sell, and a good business man is not satisfied without a reasonable profit to show for the cost of doing business. The bottler must pay for the bottles, labels, for the labor of packing and handling, and sell to the grocer at a figure that will enable him to make a profit also at the retail price. If we sell at ten cents retail, the grocer is compelled to sell at a similar figure and the producer who does not retail his crop must sell at a price that will allow for all these expenses.

Honey is now worth more money than it has been worth for many years. There are few places where it should sell for less than twelve and a half cents per pound in sixty-pound cans, or fifteen cents per pound in smaller quantities. If the beekeeper is not willing to ask these prices he should in justice to the stability of the market and the good of other beekeepers, sell to a bottling concern at jobbing prices. If a man's time is worth anything he can't afford to retail his honey for less than five cents a pound more than he can get at wholesale.

Raising the Local Price

The above is not written without some knowledge of the difficulties to be encountered in raising the price in a local market, where there are short-sighted beekeepers who insist on selling below the market. When I started to produce extracted honey in my present location there was little demand locally for anything but comb honey. The little extracted honey produced here was sold in small quantity at three pounds for twenty-five cents. In spite of the fact that everybody wanted comb honey and that they were accustomed to buying extracted at less than nine cents per pound, I established a price of 25 cents for a 20-

ARCHIE BANKS AND HIS WIRELESS OUTFIT. A UNIQUE MEANS OF ADVERTISING, AND INCIDENTALLY OF PLACING SOME OF BANKS' HONEY.



H. B. MORRISON'S CAR USED FOR HONEY SALES

ounce jar, 50 cents for a three-pound jar and 12½ cents per pound in lots of 10 to 60 pounds, with price of container additional. At first it looked like it would be hard to make it go, but go it did, and after the first few months the trade has always taken all that I have produced at these prices. Customers have put us in touch with buyers in many distant localities, until we now ship to many states. Since the general market price has raised so much of late our prices are rather low for retail figures at this time, but they seemed high at the time they were established.

At first the local market was almost entirely supplied by John Dufford, a comb honey producer who puts his honey on the market in fine shape, and always gets a fair price. That our competition has not hurt him is best evidenced by the fact that all his crop was sold before Thanksgiving day. The local market has been getting better every year and the people of Atlantic now consume double the amount of honey they did five years ago.

Pellett's honey has been on sale in eight grocery stores in Atlantic this season and they sell large quantities of it. It is not uncommon for some of them to sell ten to twenty dollars' worth in a month. I protect them in their price so that they are able to make about 20 per cent profit on the sales, and that is not any too much for handling it. If a man comes to the house to get honey he pays exactly the same price that he would pay at the grocery store. As a result the grocers like to handle the product and eight of them are able to push it much better than I could do personally. Various plans of advertising have been tried. The best has been a display at the county fair with a large sign "Ask Your Grocer for Pellett's Honey."

The "Every Day is Honey Day" placards advertised in this paper have been used as well as the usual display advertisements in the local papers. Sales to grocers of surrounding towns are beginning to result and present prospects indicate that it would be possible to extend the production of honey indefinitely and sell it all either directly to the consumer or through grocers in western Iowa. We have developed a local market for our own product so far without difficulty.

A Unique Way of Advertising

A most unusual means of advertising is that of Archie Banks, of Delmar, Iowa. Banks makes a hobby of electricity, and has installed a wireless station in his house. At the roadside he has erected a large bulletin board on which he posts important news bulletins, weather forecasts, etc. Farmers driving to town and tourists passing by, stop to read the latest news. In order to call attention of strangers to the board a huge sign is stretched across the road which reads:

"Today's weather report by wireless on next curve. EAT HONEY. For sale here. Archie Banks."

The wireless service, of course, always attracts the attention of the passer-by who wants to know the latest news. The sign calls his attention to the fact that honey is for sale here, and since he has stopped anyway to get the news he might as well take along some honey. This simple means brings enough customers to the Banks' door to take all the honey that his 140 colonies of bees produce. Next season he intends to increase to 200 colonies, as his signs have developed a far larger demand than he is at present able to supply.

While there are few beekeepers who could install a wireless outfit for the purpose of catching the wireless messages from all parts of the world, to interest their neighbors, the big sign across the road could as well call attention of passing tourists that any beekeeper had honey for sale.

EAT HONEY
BANKS

ARCHIE BANKS' SIGN ACROSS THE ROAD AT DELMAR, IOWA.

Selling Honey at Farm Sales

F. W. Hall, of Colo, Iowa, is a large producer who frequently has a crop of 40,000 pounds to dispose of. He finds the farm sale to be a splendid place to find a market. At these auctions a cold lunch of sandwiches and coffee is usually served to all who come. Hall takes a bucket of honey and at the lunch hour gives everybody a spread for the buns. Since at this hour there is little counter attraction he makes it a point to offer his five and ten-pound pails of honey, and usually he is able to dispose of a good load in this manner. Aside from his time there is little expense connected with this method of selling. He hands out a sample at the most favorable time. The men are hungry and the free lunch served is of the simplest kind, so that honey is an acceptable addition. Give a hungry man biscuit and honey and if he has a dollar in his pocket the chances are good that he will exchange it for honey to take home to the family. With an automobile it is an easy matter to attend the farm sales within a radius of fifteen to twenty-five miles of his home. By following up the farm sales during the winter months when he has little other work to do, Mr. Hall is able to market a large part of his honey direct to the consumer, at a minimum of expense.

A somewhat similar plan is that followed by Mr. H. B. Morrison, of Fayette, Iowa. Morrison has a very nice car built especially for a delivery business. In order to reach his customers directly, Morrison advertises to the citizens of the small towns within reach that on a certain afternoon, usually Saturday, when there are more people on the street, he will be there with a load of honey. Packages of various sizes are loaded into the car, so that he is prepared to supply every call, from a pound to a five-gallon can. The number of customers grows with each trip, as the people become acquainted with his product. The nice appearing car is a good advertisement in itself, and he is always surrounded by interested people who are on the watch for the visit of the honey car. Within a radius of twenty-five miles of Fayette there are about twenty-five towns ranging from a few dozen people up to five or six thousand. By making these selling trips at occasional intervals, he is able to find a direct sale for a large quantity of honey. With more honey to sell it would only be necessary to extend the length of his trips and take in other towns a little farther on.

In Memphis, Tenn., last summer, my attention was attracted to a delivery wagon with a honey sign which I at once proceeded to get in range of my camera. Later I learned that Gakler's honey wagon is a familiar sight on the streets of Memphis. He sells to a large extent to the grocery trade.

There are many ways by which the wide-awake beekeeper can call attention to his product and bring buyers to his own door. The poorest way to stimulate trade is by cutting prices, and the man who sells at a price below the general market does an untold injury to the business in general. Such price cutting does more to hold down prices than all the big buyers put together could do.

Central Grading Stations for Comb Honey

By L. A. Knemeyer.

EVERY beekeeper has his or her grading station right at home. That is, all the comb honey is put up ready for the market on the premises.

The grading is, or is intended to be, according to the well established and recognized rules of the Colorado Honey Producers' Association. The result should be a uniform market product, a market value easy to sell, to ship, and at all times satisfying to the customer.

This can be attained only when all the honey is put up in a uniform way, when all fancy honey is really fancy, when No. 1 is really No. 1 and not either fancy or No. 2, etc., and when all the honey is put up in the same manner. Only then the producers will find a ready market.

Every up to date beekeeper wants to overcome the so-called "misgrading" or rather "different" grading of his honey, and this can be done only by having all the honey of a certain locality put up by the very same crew of workers, and under the same working conditions as far as grading rules, grading light facilities and grading scales are concerned. This can be done only at a "Central Grading Station"; that is, all the honey of a certain locality should be brought to a central place and there put up by the same force of workers. This method has not been tried yet.

A second way would be to have a grading party going from producer to producer grading the honey which is ready for grading. This latter way has been tried and found a failure, according to a statement by Mr. Frank Rauchfuss, of Denver. He stated that on account of the different light facilities the very same person was grading in an altogether different way at different grading places.

For the establishment of a "Central Grading Station," we have the following arguments:

1. The scraping and cleaning can be done more satisfactorily.

2. The grading can be absolutely uniform.

3. The buying, nailing and storing of the shipping cases is simplified.

4. The loading and shipping of the honey can be done easier.

5. The protection against theft and fire is easier obtained and secured.

6. The keeping of a certain temperature for the stored honey will be more easily achieved.

Against the establishment of a "Central Grading Station" are the following facts, some of which we can overcome and some which we simply have to suffer:

1. The almost unpreventable nuisance of having more or less molesting bees around the place.

2. The finding and renting of a suitable place.

3. The renting expense.

4. The transportation of the supers to and from this place.

5. The keeping apart of each producer's honey, supers, supplies and broken-down honey.

6. The employment of a "grading superintendent," a man well acquainted with the whole routine of the "putting up" or "getting ready" for the market of the comb honey.

In case we decide on a central grading station we have to consider the rent of the building, the employment of a grading boss, the protecting, insuring and keeping warm of the honey.

A committee would arrange for a meeting of all honey producers belonging to a particular grading station. Said meeting would fix all business matters needed for establishing the station: locating and renting a suitable place, providing grading tables, scales, deciding on the plan and manner of running the grading business, etc.

Second. The grading committee would adopt certain grading rules in accordance with the requirements of the honey market.

Third. A set of grading samples for the grading station should be secured.

Fourth. Hire all the needed working force for doing the work of grading and teach the persons the right way of grading and give them all the instructions necessary for grading.

EAT PURE
HONEY
AT ALL GROCERS
GAKLER'S
HONEY FOR SALE

THE SIGN ON GAKLER'S WAGON IS A FAMILIAR SIGHT IN MEMPHIS, TENN.

AMERICAN
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA
BEE JOURNAL

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C. P. Dadant, Editor.
Dr C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Prices of Bees

Some of the shippers of bees in combless packages talk of raising prices another year. We believe that those who do will find that they have made a mistake. At present bees are selling at about a dollar per pound with transportation and cost of queen extra. This we believe to be about all the traffic will bear. In most of the northern states bees sell at from $3 to $5 per colony, which includes bees, queen, hive and drawn combs. This year there has been a very great demand for bees. This is largely the result of last year's wonderful crop. The crop this year will fall far short of that of last year and many localities report a very poor prospect. The southern shippers should bear in mind that this year's demand is not a safe guide on which to base plans for future business. We firmly believe that the package business has come to stay and that conducted on a business basis it will prove dependable for many years to come. However, boom prices for honey and big crops are seldom to be expected, and neither the honey producer nor the package man should be deceived by these extraordinary conditions. Beekeeping is a safe enterprise for a long series of years, but a period of depression is quite likely to follow a period of undue expansion, the same as in other lines of business.

The Control of Fertilization

Under the heading "We Have Not Done It," Gleanings bravely acknowledges that, after great expense in preparing a large hot house for fertilization of queens, the attempt was a failure. We take off our hat to the man who knows how to tell of his ill-success as well as of his achievements.

Two methods have been tried for fertilization of queenbees under the control of the apiarist, confinement in a large room or cage with plenty of drones, and forced copulation by what might be called a surgical operation.

Both of these methods have been claimed successful by leading apiarists at different times. Mrs. Ellen S. Tupper, who for a time was coeditor of the American Bee Journal, in 1874, with the Rev. W. F. Clarke, claimed success by the cage method, and told the writer personally that she had had hundreds of queens fertilized in this way. Whether she was deceiving herself or trying to deceive others is a question.

N. W. McLain, who was appointed by the General Government in the eighties for experiments in beekeeping, claimed success in forced copulation, and published an article upon this subject in the American Bee Journal of May 5, 1886. Mr. McLain was apparently a very active worker. He had his headquarters at Aurora, Illinois.

Although it is quite probable that an occasional success was achieved, perhaps with each of these two methods, we believe it is well to warn the prospective experimenter against too much confidence. We do not mean to say that success is impossible. No one knows what the future has in store, and impossible things have been achieved; witness wireless telegraphy and human air travel. But the simple thing of bee matings seems to baffle the most sanguine experimenter.

Controlled fertilization of queens would be worth while. Until it is achieved no certainty may be placed upon thorough breeding of a race. The nearest that may be secured is by isolating the colonies used for breeding or by allowing the queens and drones to fly only late in the day, when other drones have returned. This has been secured fairly well by placing the colonies in question in the cellar until late in the day.

Are We Improving

The bee journals of twenty-five years ago are very interesting reading. The most animated discussions run through successive issues. Many things that were holding the attention of the beekeepers then have been discarded, while other questions have been so thoroughly settled that there is no longer room for question. For months the question of whether the beekeeper could honorably and profitably feed sugar to be stored and sold as honey was debated with great heat. The high price of sugar has long since made such a question impossible, even had not the pure food laws settled it otherwise.

Self hivers received a surprising amount of attention for a year or two, and some beekeepers even went so far as to declare that they were the greatest invention of the age, not excepting the movable frame. Who has even heard of a self hiver during the past ten years? Dozens of similar utilities were put forward with great expectations only to be proved impractical.

Comb foundation is now regarded as absolutely essential to successful beekeeping, yet there were heated arguments about its value for a long period of time before it finally demonstrated its usefulness.

After reading the spirited and sometimes bitter controversies of other days, one cannot but contrast them with the journals of the present and wonder whether we are making as much progress as we think. Such debates indicate the liveliest interest on the part of the readers. Possibly the difference is only that we lack the new ground to break which goes with pioneering in any country or any business.

Is Swarming Wasteful

The "Weekly News Letter" of the U. S. Department of Agriculture for June 6 contains an article concerning the "wastefulness of swarming." We had never thought of it in that light. But swarming is really very wasteful when it takes place at undesirable times or when the colonies ought to be busy storing honey. It is especially wasteful when 1, 2, 3 or more natural swarms issue from one colony. We have known of apiaries entirely depopulated when a hard winter followed a season of excessive swarming. The worst feature of it is that many inexperienced bee owners are pleased with what they think is extraordinary prosperity. The careful and practical beekeeper never allows secondary swarms, and returns them to the parent colony, if they happen to issue. Hiving them in any sort of box and returning them to the parent colony the next day is almost a positive cure for further swarming.

Government Help to Beekeepers

More than ever before, the United States Department of Agriculture is making efforts to help beekeepers by furnishing information free of charge and by urging beekeepers in the whole country to follow modern methods. The result will be better beekeeping, less diseases and more practical methods of selling the crop. Honey producers must stop the practice of selling their honey at whatever price they are offered. A fair, reasonable price should be secured, which ought to be based upon the amount produced.

Can What You Can

The very excellent piece published in our July number under the above title has been praised by many. It was written by Mrs. H. K. Beard, of the Pennsylvania Association, and read before that association in the fall of 1909. It was then published in Gleanings and republished in their June number of the current year. It is worthy of the notice it has secured.

Bees Killing Queen, After Safe Introduction

Why do bees sometimes kill their queen after she has been safely introduced and has been laying a number of days?

The above question is sent to us by a novice. But even a man of long experience cannot answer this question with any great certainty. Dr. Miller's well-known "I don't know" would probably fit the question best. We can only make suggestions.

The behavior of bees towards each other as well as towards queen and drones depends very much upon circumstances. In good honey weather, when everybody is happy, things go on smoothly. You may take a nearly full super with all the bees in it from a strong colony and exchange it for the nearly empty super of a colony under average, thus equalizing their storage room, and you will have no disturbance if the crop is on. But if the dearth has come, you may look for a fight. If there is plenty of honey in the fields, the drones may make their home in any colony or go from one to another without opposition. Similarly, if you wish to introduce queens safely, you will succeed much better in good honey weather.

W. D. WRIGHT, of New York.
One of the oldest subscribers to the American Bee Journal. See article in last issue.

If a queen is introduced in times of scarcity, after the old mother has been removed, she may be accepted, under self-reservations, by some of the bees, although the great majority of the workers may have accepted her in entirely good faith and are considering her as their real mother. If she should prove insufficiently prolific, or if disturbances beyond control should induce more or less robbing, those bees who have reluctantly accepted her may become angered at her and start a revolt or balling of this queen. Or they may start queen-cells, with the expectation of superseding her as soon as the young queen is fertile. This is noticed often with queens that have suffered from protracted transportation. They lose their fertility to a certain extent from the confinement, acquire an unleasant odor and become sluggish. Usually a few days of rest bring them back to full vigor and breeding capacity, but in some instances they never do regain full activity. We believe very young queens are more likely to regain their strength after travel than old queens, even if the latter are only yearlings.

This is an explanation of the superseding queens which have been thought safely accepted. The dangerous thing is that it takes only two or three angry bees to cause a queen to be balled. Bees are not much superior to human beings when it comes to insurrection, and much of the troubles of the world would not happen if living beings had more patience.

The less fatigued a queen is, the more certain she is of safe acceptance. We have never had any trouble in inserting a queen into a drone-laying colony, because we have always used for that purpose queens that we wished to discard to make room for better ones. Those queens were always taken from colonies when in good condition, and were therefore in the best of trim for safe introduction. No one can boast of an infallible method of introduction who has not tried it on queens fatigued by two weeks or more of travel.

Congregation of Queens and Drones

Last summer I saw a sight which seems to bear out Doolittle's idea that queens and drones congregate in places to mate. I had out probably 800 nuclei. About 2 o'clock in the afternoon I was out in the queen yard and heard the roar of drones and later saw something flying very fast and walked out to where I saw it, as it was in a clear place. There were I don't know how many queens, and drones without number. You have seen birds chasing crows; that is the way they were, from one to fifty drones after a queen at once. Then in a second one would have her and the drones would disperse so quickly it was hard to tell where they went. They flew so fast that you could hardly follow them. At the rate they were flying none but the strongest drones could ever be lucky enough to capture them. After about ten minutes the whole thing had moved out of sight.

D. D. STOVER.

Bumblebee Flowers

By John H. Lovell

Photos by the Author

MOST people suppose that all flowers yield nectar and are valuable as sources of honey. A supply of nectar sufficient to meet the wants of a small apiary is commonly thought to be afforded by an acre of buckwheat or a large flower garden. Beekeepers, indeed, are generally aware that many flowers furnish only pollen; but when it is remembered that not one beekeeper in thirty takes a bee journal it is evident that the majority of them have only a meager acquaintance with the American honey flora. Even by the more progressive beekeepers nectariferous flowers adapted to bumblebees, moths and birds are often listed as good honey plants. Bumblebee flowers are so common and so widely distributed that no student of the honey flora can afford to neglect them, yet, if I mistake not, this is the first paper on bumblebee flowers ever published in an American bee magazine.

Of all bumblebee flowers the most important and by far the best known is red clover (Trifolium pratense). When insects are excluded red clover is almost wholly self-sterile, as can be shown experimentally, for when the plants are covered with fine netting less than one-half per cent of seed is obtained. The flowers are pollinated chiefly by long-tongued bumblebees, which under normal conditions are alone able to obtain the nectar. The floral tubes are 9 mm. long, which, of course, excludes the honeybee which has a tongue only 6¼ mm in length. Our domestic bees quickly learn this fact from experience and seldom visit the clover heads except when the corollas have been shortened by dry weather or other causes. When this happens, as has been observed by Doolittle and Hutchinson and others, hundreds of pounds of red clover honey are stored. Even in the same clover head I have found by actual measurement that the floral tubes vary in length, and it would be little short of a miracle if they did not, for flowers of all kinds vary in size and consequently in length of their petals. Honeybees sometimes visit the flowers of red clover to procure pollen, when they spring the keel and effect pollination. (Fig. 1).

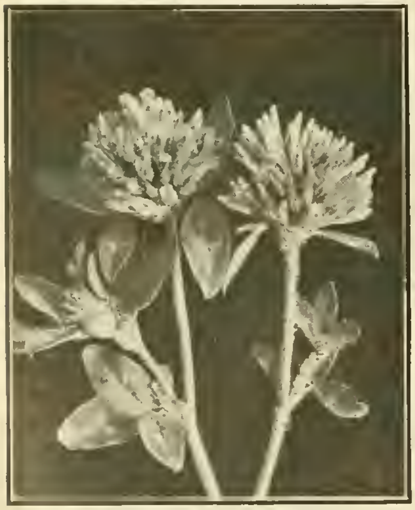


Fig. 1. Red Clover (Trifolium pratense). Photograph by John H. Lovell.

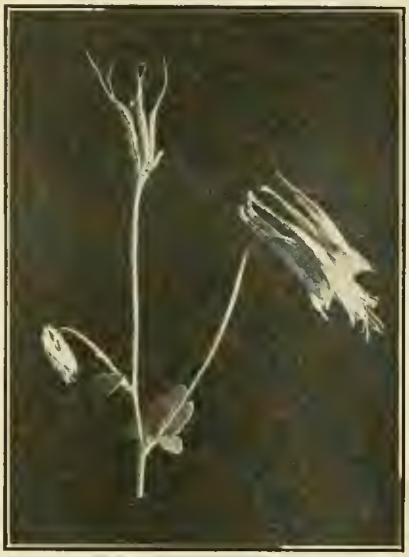


Fig. 3. Wild Columbine (Aquilegia Canadensis L.) A bumblebee flower. Photograph by John H. Lovell.

In lands where there are no bumblebees red clover seed cannot be profitably raised for market until after these insects have been introduced. In New Zealand, fields which were almost barren in their absence produced great quantities of seed after their advent. At Canterbury 26 acres of red clover were the resort of thousands of bumblebees and yielded 400 to 500 pounds of seed per acre. In one province alone, in 1912, 610 acres were sown with red clover, which it is estimated yielded an average of 158 pounds to the acre. Thus bumblebees benefit the Islands of New Zealand annually to the extent of many thousands of dollars.

A half dozen bumblebee flowers are widely cultivated in flower gardens. The stately larkspur, with its wand-like raceme of deep blue flowers, is a native of Europe, where it is pollinated by the female of the garden bumblebee, no other bee on the wing at the time it blooms having a tongue long enough to reach all the nectar, although a part of it is accessible to a few other bees. I have seen honeybees searching the flowers and pushing their tongues down into the long spurs as far as possible, but they were never able to gain any of the sweet spoil.

Then there are the aconites or monkshoods. If you will take a plaster cast of the inside of a flower you will find that it corresponds almost exactly to the shape of a medium-sized bumblebee. This genus of plants is so dependent on bumblebees for pollination that it is absent from those parts of the world where there are no bumblebees. For instance, there are no native bumblebees in Australia, Arabia, Southern Africa, or New Zealand, and in these countries there are no indigenous species of Aconitum. (Fig. 2).

The columbines manage to thrive and bloom under the most difficult conditions of soil and climate. The long spurs of the variously colored pendulous flowers are rich in nectar and are frequently visited by bumblebees. The columbines are often re-

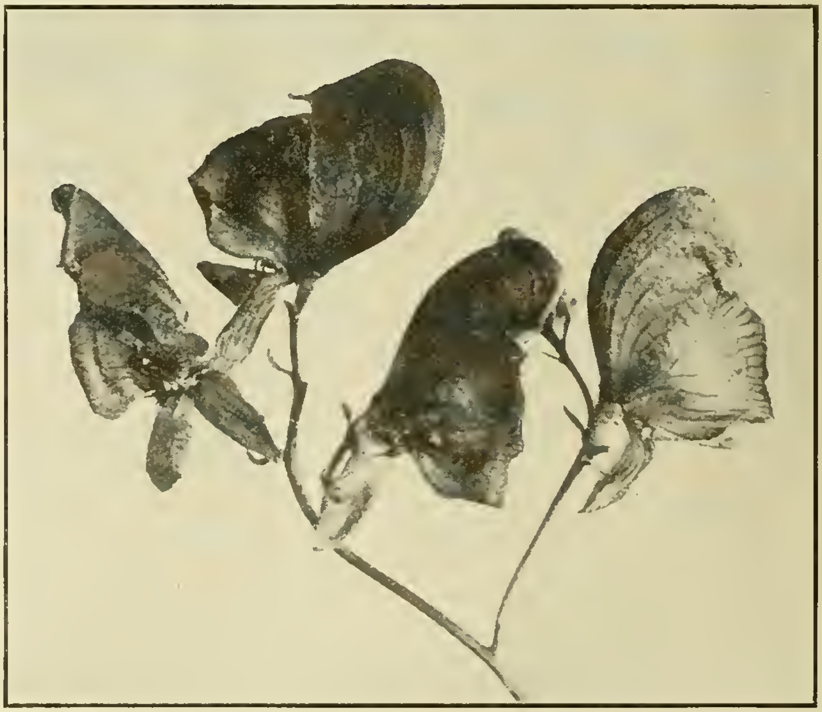


Fig. 2. Monkshood (Aconitum Napellus). Photograph by John H. Lovell.

garded as honey plants, and are so listed in the Honey Plants of Nebraska, but I have never seen a honeybee obtain the nectar in the normal way. But in order to get the nectar more quickly, bumblebees bite holes in the spurs, and then many honeybees resort to the flowers and suck the nectar through these punctures. Our wild columbine has scarlet flowers which are yellow inside, or rarely all over. It is visited by humming-birds as well as by bumblebees. (Fig. 3).

The snapdragon, with its many colored varieties, is another bumblebee flower widely cultivated in gardens. So firmly are the lips closed together that the smaller bees cannot force them apart, and thus the nectar is protected for the rightful guests. But as the flowers grow older the lips often part slightly, and then the smaller bees can gain an entrance. The great size of the corolla permits the largest bumblebee to creep wholly within it.

Another common bumblebee flower is the garden nasturtium. The lower part of each petal is marked with red, which serves as a guide to the honey; while the claws of the lower petals are fringed with hairs, which prevent water running into the spur. Honeybees cannot reach the nectar, although they sometimes attempt to do so. Occasionally they gather pollen from the anthers, which are fully exposed and dehisce or open one at a time, rising successively before the mouth of the flower. Only bumblebees with the longest tongues can reach all of the nectar; and here it may be added that the tongues of the various species of bumblebees vary from 5-16 to 13-16 of an inch in length. The spur is so tough that bees cannot perforate it, although they apparently sometimes make the attempt.

Frequent references may be found in bee literature to the spotted "touch-me-not," or Impatiens biflora, which covers acres of damp land and blooms profusely. The flower is shaped, as shown in the figure, like a horn-of-plenty with the spur bent inward beneath it. It is a bumblebee flower and is very frequently visited in the locality of the writer by the wandering bumblebee (Bombus vagans) and the ground bumblebee (Bombus terricola). The blossom is suspended horizontally with the stigma and anthers lying on its upper side so that when a bee enters the corolla sac its back is dusted with white pollen, as has often been observed and mentioned by beekeepers. But contrary to the general impression, honeybees obtain little if any nectar from the Impatiens, except when the spurs are punctured by bumblebees. (Fig. 4).

It is a matter of some difficulty and delay for bumble bees to enter the flowers, and very likely short-tongued workers are not able to reach all the nectar, so after a little time they bite holes in the spurs, out of which they steal the sweet contents. On August 10th I examined a large number of flowers, but none of the nectaries were punctured, and they were visited normally by Bombus vagans at the rate of from seven to twelve visits per minute. But during the latter part of August I found hundreds of spurs perforated and both bumblebees and honeybees gathering the nectar from these punctures. (This habit led Mueller to call the bumblebee an "anti-teleologist.") A honeybee was watched during 25 successive visits, and not once did it even make a pretense of entering the flower, but in every instance it swung itself astride of the spur, pushed its tongue through the puncture, and became literally a flower robber. Ten such visits may be made in a minute. The Impatiens is certainly rightly named.

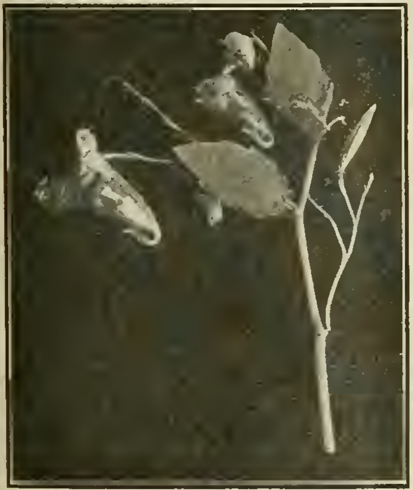


Fig. 4. Jewelweed or Touch-me-not (Impatiens biflora). Photograph by John H. Lovell.

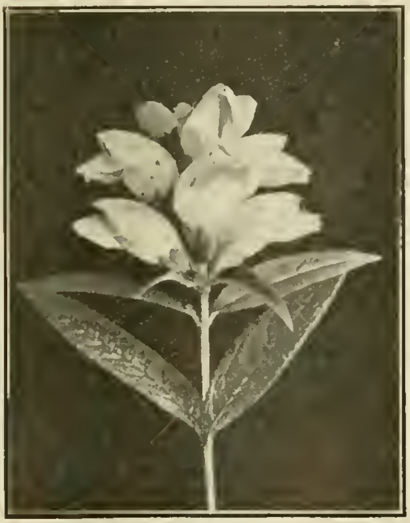


Fig. 5. Turtlehead (Chelone glabra L.) A bumblebee flower. Photograph by John H. Lovell.

A typical wild bumblebee flower is the turtlehead (Chelone glabra), which grows along the banks of streams and on wet land. The large white flowers rudely mimic in form the head of a turtle. Although I have had them under observation for many hours and on many different occasions, I have never seen them entered by any insects except bumblebees. Wasps and flies sometimes examine the lips, which are tinged with yellow, apparently looking for nectar, but they never pass between them into the corolla chamber. I once placed several flower clusters of the turtlehead in front of a beehive, but they received not a single visit from the many honeybees coming and going; but in a little while, notwithstanding their unusual position, every blossom was examined by bumblebees. The honeybees seemed instinctively to know that these flowers were not designed for their use. (Fig. 5).

Last summer I saw a blue meadow, or one largely covered with the purple-blue flowers of the blue flag (Iris versicolor). While bumblebees make the best pollinators of this species, it is not strictly a bumblebee flower, since it is often visited and pollinated by honeybees. In the absence of insects it is usually self-sterile. The nectar is excessively wasted by the blue flag beetle, which passes its entire life on this plant, the larvæ feeding on the seeds and the adult beetles on the nectar; this weevil sinks many holes in the nectariferous tissue, from which the nectar flows freely, attracting swarms of flies and beetles.

The closed gentian and the fringed gentian, both of which are bumblebee flowers, have funnel-formed corollas. The gentians bloom in late autumn, and are especially abundant in the Alps, where they display great sheets of blue color. The closed gentian never opens, and on a cold morning the temperature within the corolla chamber may be several degrees above that of the outside atmosphere. The fringe of hairs on the edge of the corolla of the fringed gentian prevents the ingress of small insects. (Fig. 6).

Other familiar bumblebee flowers are the Rhododendrons and Azaleas and the beautiful Rhodora canadensis, which is pollinated in spring by

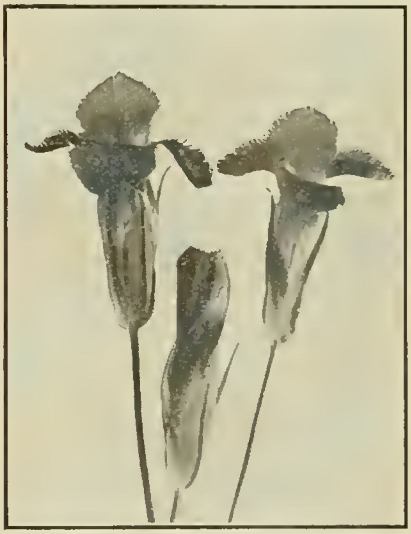


Fig. 6. Fringed Gentian (Gentiana crinita). Photograph by John H. Lovell.

queen bumblebees, the only caste of bumblebees then on the wing, for the males and workers do not appear until later; the fly honeysuckle (Lonicera ciliata), also pollinated in May by female bumblebees, which in their haste to get the nectar often cut the buds into shreds; the Tartarian honeysuckle (Lonicera Tatarica) of the garden; the bog fly honeysuckle (Lonicera coerulea); the bush honeysuckle (Diervilla trifida), the yellow flowers of which turn red in fading; the horse chestnut; the foxglove, and the Gladiolus.

The garden pea is almost invariably self-fertilized, but both, as well as the scarlet runner and sweet pea, are in fact bumblebee flowers. Honeybees often visit the flowers of the scarlet runner, from which they are able to suck a little nectar, and occasionally the nectaries are perforated by bumblebees and then the honeybees rob the blossoms in wholesale fashion. Besides the red clover, the crimson and Alpine and several other clovers are bumblebee flowers, indeed a good many of the pulse family, although visited by honeybees and other long-tongued bees, as well as bumblebees, seem rather better adapted to the latter, since they are better able to depress the keel.

The lungwort (Pulmonaria officinalis), Belladonna (Atropa Belladona), the bearberry (Arctostaphylos Uva-ursi), the wood betony (Pedicularis silvatica), gill-over-the-ground (Glechoma hederacea), and largely butter-and-eggs (Linaria vulgaris) are bumblebee flowers. The scarlet sage (Salvia pratensis), with its walking beam mechanism for placing the pollen on a bee's back; dragonhead (Dracocephalum), Molucca balm (Moluccella laevis), bugle (Ajuga reptans), and several orchids, as the showy orchis (Orchis spectabilis), the pink flowers of Pogonia (ophioglossoides), common in bogs, and Calypso borealis are all pollinated by bumblebees. The pretty flowers of the purple Gerardia (Gerardia purpurea) are abundant in autumn, but they contain little nectar and attract only a few bumblebees. Finally, there may be added to the list Cerinthe alpina, Scopolia atropoides and black henbane (Hyoscyamus niger).

Before removing the head of a barrel mark the head and chime carefully

This is far from an exhaustive list of bumblebee flowers ,but it includes the more common species, and shows how widely distributed and abundant they are. In many instances honeybees are able to gather pollen and not infrequently a little of the nectar; but, so far as I am aware, not one of these bumblebee flowers is of much value as a honey plant. Bumblebees have played an important part in the development of our flora and the bumblebee flowers should be known to every beekeeper.

The Use of Barrels for Honey

By the Editor

REGARDING what barrels to use for storing honey temporarily, before pouring it out into retail receptacles of different sizes, our readers are referred to the editorial in the July issue. We will now explain how we take honey out of a barrel, even after it is granulated, without damaging the barrel.

We must, however add a few words concerning the use of barrels. While reading the July editorial on this subject, a friend turned to the editor and said: "Of course, you wash out the barrel with hot water first?" Not by any means. We have said, and we repeat now, that "a barrel will not do which has been rinsed out." The barrel must be as dry as possible and the glue coating inside, which is so slight as not to be easily detected when the inside is inspected, must not be disturbed. The barrel must be dry, else the honey would absorb the moisture which it contains within the staves and the barrel would leak.

Syrup barrels which have iron hoops may prove as good as alcohol barrels, but they must be free from odor. Alcohol evaporates very readily and a barrel which has contained it is perfectly clean unless it has been used for other purposes meanwhile.

When pouring fresh harvested honey into barrels we use a large funnel and sieve, which is almost a necessity. A whole pailful of honey is dumped into this without having to wait for it to run through the funnel.

Let me repeat that the great advantage of barrels is that the honey may be drawn from them into any sort of retail receptacle as trade requires. Drawing from 5-gallon tins is much more troublesome. If the barrel has been set properly with the bung up, for a few days, while the honey is liquid, the few particles of wax which may have found their way into the honey will be drawn off with the last gallon or two. This is put into an open vessel and the skum skimmed off as soon as it has risen to the surface.

When it is expected to allow the honey to granulate in the barrel, the latter should be set on its head, so that the moats of wax will be at the top, when the head is removed. If a half gallon of space be left when filling the barrel, the head will not touch the honey and will be more easily removed.

To remove the head and not injure the barrel we first mark the head and the chime in such a way that the exact position in which the head is placed may be found again. Two marks, on edge of head and chime, with a pencil, a crayon or a chisel, will enable one to find the exact spot in resetting the head. If this is not done, the head may be put back in another position and possible slight irregularities, which fit into each other, will be placed so as to cause ill-fitting joints and possible leakage in future. We must have our barrel as good as before, so that it may be used indefinitely. For convenience, the hoops may also be marked so as to be returned in the same position.

We now use a strong gimlet screwed into the center of the head for a hand hold. With a hoop-driver and a mallet, the hoops are driven up and removed from the head. If the honey be slightly liquid, it is well to retain one or two to be put back as soon as the head has been lifted out.

The staves may have to be driven apart a little. Usually they fly back to assume a straight, nearly upright position as soon as released from the hoops. The head is lifted away without effort by means of the gimlet. If no gimlet is at hand when the operation is performed, a

Chasing the Hoops on a Honey Barrel

large nail or screw may be used in its place.

When the honey is granulated very hard we find nothing more convenient to dig it out than a clean, bright spade.

We have often removed the head of a barrel of honey, taken the honey out, melted it, put the head back in its place and poured the honey back into the same barrel, in the liquid form. Here a warning is necessary. Do not put back the honey into the barrel while hot. We have known hot honey to absorb moisture to such an extent as to shrink the staves and leak out.

If the above instructions are carefully followed, the same barrel may be used over and over a number of times. It should be thoroughly emptied if the intention is to keep it ready for the following year's crop. A little honey remaining on the inside may absorb moisture and cause fermentation of the next lot.

Legal Advice on Beekeeping

By Our Staff Correspondent

"The city council here has passed an ordinance making it unlawful to keep bees within 500 feet of any dwelling or public place. They must also be elevated 30 feet in the air and confined on their owner's property. There is a provision for fining the beekeeper not to exceed $100 per day for keeping bees in violation of this ordiance." INDIANA.

It is hard to find words to do justice to a case of this kind. The ordinance is so absolutely foolish that there is little question but that the courts would declare it void upon proper presentation of the case. Had the council been content to stop at requiring a distance of 500 feet between the apiary and a dwelling there would have been some ground for them to stand on. Even this is an excessive distance in town. It would be hard to find a location a fifth of a mile from a dwelling in any town of my acquaintance.

The beekeepers of the country should certainly form some sort of organization for fighting such farcical legislation as this on the part of town councils. The Iowa Beekeepers' Association has prevented the passage of such ordinances in some cases by taking the matter up when it was under consideration and serving notice that there would he a contest if an ordinance was passed which prohibited the keeping of bees within the town limits.

In a case of this kind the beekeeper is compelled to fight for his rights. He can wait to be arrested and then defend himself on the ground that the ordinance is void, or he can employ an attorney and attack the ordinance at once. In either case it is expensive, and beekeepers generally should assist in paying the cost of such litigation.

"Can I keep bees in town on my own property? I am a beginner. My bees have at two different times stung one of my neighbors and he promises to make me trouble. Can the town council declare them a nuisance and force me to get them out of town?" ILLINOIS.

Here we have again the old question of the right to keep bees in town. We have already answered similar questions in these columns. The town council cannot legally pass an ordinance prohibiting the keeping of bees within the town limits on the ground that they are a nuisance. On the other hand, if your bees are so situated that they continue to annoy your neighbors they may be a nuisance in fact, and if so there is ample authority of law to compel you to remove them. It all depends upon circumstances. You do not say anything about the circumstances under which your neighbor was stung. If he was at a distance from your premises how does he know that it was your bees which stung him? Bees fly for a long distance and it is difficult to prove the location from which a particular bee might come. If your neighbor lives close to your apiary you should by all means seek to get your hives located in such a way that they will not annoy him.

In general a man has a right to keep bees on his own property in town the same as anywhere else, but the residents of towns are bound to respect certain rights of their neighbors which do not require consideration in the country because of the greater distances.

"If a swarm of bees alights on another man's property, have I the right to get them after asking my neighbor and he refuses permission." IOWA.

If a domestic animal strays on the premises of another the owner has no right to follow and reclaim it, according to a strict interpretation of the law, for in so doing he becomes a trespasser. However, he still retains his right of ownership. The same rule will apply to bees. There are several court decisions which maintain that the owner of bees which have thus gone beyond his property limits can recover damages for the amount of their value from a third person who hives them and takes them away.

In case bees, as any other property, are wrongfully detained from the owner, he may bring an action of replevin and recover his bees or their value.

It would be an unusual case which would justify a beekeeper to start legal action for recovery of a swarm of bees. Although his rights in them are the same as though the value was much greater, the amount at stake is too small to make it worth his while to start a quarrel. A better plan is to send a jar of honey to the neighbor before the bees begin to swarm, and thus establish a friendly feeling toward the bees.

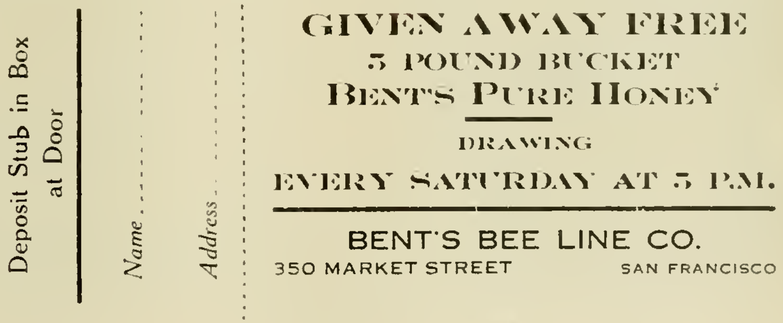
A Personal Experience in Marketing Honey Direct to the Consumer

By Ralph R. Bent.

IT is a common thing today to hear of students in various colleges working their way through school. The writer, being a beekeeper, was obliged to depend on these insects for his livelihood while in college.

The sale of honey direct to the consumer is by no means easy, unless properly carried on. Many beekeepers attempting marketing their products in this manner make several serious mistakes. One of these mistakes is, no matter whether the customers are large or small users, they should be called upon regularly. I have in mind one woman who once purchased a ten-cent bottle of honey when I called upon her at her home. I called upon her nearly every week for nearly two years, during which time she never purchased from me. Today she is one of the largest honey users that I know of, using it to sweeten her tea and coffee and all of her cooking. This experience goes to show that the public requires educating. I always have aimed to distribute any literature on the subject possible, such as cook books, circulars, etc. At first, when getting around, our conveyance was a home-made affair composed of baby buggy wheels and a soap box, covered with attractive signs. This made quite a push cart. On visiting each house the lady was shown a one-frame observation hive or nucleus and the queen bee. After explaining to her some of the wonderful mysteries of the industry, she was asked to taste our pure honey. Such a call as this, properly conducted, is almost certain to bring sales.

After such experience, I have chosen packing honey in pails for a "Direct to the Consumer" package, the sizes being 2½ pounds, 5 pounds and 10 pounds. The prices which we receive are 40c, 75c and $1.35. We pack nothing but an amber honey,



Deposit Stub in Box at Door

Name ....

Address ....

GIVEN AWAY FREE

5 POUND BUCKET

BENT'S PURE HONEY

DRAWING

EVERY SATURDAY AT 5 P.M.

BENT'S BEE LINE CO.

350 MARKET STREET SAN FRANCISCO

TICKET USED BY RALPH R. BENT IN STIMULATING SALES OF HIS BEE LINE HONEY.

and blend to obtain a mild, suitable flavor.

By constant perseverance this small direct to the customer peddling business soon grew to use all the honey the writer could produce. The next thing resulted in having to purchase the entire crops of several other beekeepers in order to accommodate the demand. As time went on, a Ford car took the place of the push cart. A large part of the business developed into a mail order system. People who had used the honey told their friends, our circulars and cook books more than paid, although it may have seemed an unnecessary expense.

During 1915 the writer, having finished college, took charge of a honey exhibit at the Panama-Pacific Exposition in San Francisco. Here a new, important discovery in the way of the direct to the consumer marketing was found. It may be a surprise to the reader, also, that three-fourths of the pails sold during the 1915 Exposition were ordered by men. I therefore conceived the idea that if I opened up a honey store on Market street, San Francisco, in the heart of the business section, it might prove successful. This we did in 1916, and have found our method very profitable. We have placed an observation hive in the window and on Saturday afternoons we sometimes give a live bee demonstration, where thousands of people passing by are greatly amazed at beholding a boy in a bathing suit pour handfuls of live bees over his head, and even putting them in his mouth. All this arouses interest and is the best and cheapest advertising. In spite of the high rents, our business promises to be very successful.

Strange as it may seem, our cheapest package of honey is 40c, with the exception of comb honey. I might mention that we also handle at our store cakes made of honey.

Another means of very successful advertising is our lectures and live bee demonstrations given before various church societies, lodges, clubs, etc. For such demonstrations we issue a ticket which gives admittance to the lecture.

These tickets are given free to the church societies. They are allowed to sell them for 5, 10 and 15c, or even 25c, and keep the proceeds themselves. At such a demonstration a hive is opened under a bee tent made of mosquito bar and the bees handled in the freest manner; the people are shown the queen, drones and workers and other interesting things found in every colony of bees. The demonstration is accompanied by a lecture, after which honey refreshments are served. The refreshments are composed of honey direct from our pails and spread on small crackers. A liberal distribution of facts about honey and other circular literature is handed out. Through such a demonstration it is not uncommon to bring about the sale of several hives of bees, as well as obtaining many permanent customers as consumers of our product.

As I said before, it is my practice to continually call on and keep at our customers. So we have devised a scheme by which we obtain the names of those who buy over our counter. We do it in this way: In our window we advertise a free 5-pound bucket of honey, given away each week, and each purchaser is requested to write his name and address on a ticket, which is then divided, the half which they keep bearing our name and the stub, to be dropped in a box, bearing theirs. One person out of several hundred each week is fortunate enough to win a bucket. He is notified by mail and asked to call at the store for his prize. The remaining stubs contain names and addresses of actual users of honey and honey cakes. To these we send literature and advertising matter, and invariably we receive repeat orders. There are many other phases of our direct to the consumer business, but space prevents us mentioning more at the present time.

HONEY
HONEY

Honey Tank Carried in Car for Retail Sales.

A Honey Route

There are many places where a fine trade in honey can be readily established if the beekeeper makes regular trips over the route. At Leslie, Georgia, Mr. T. W. Livingstone and his son-in-law, Mr. J. R. Hudson, have found it possible to dispose of a large amount of honey in this manner. The picture shows their large closed tank which is loaded on the auto and carried from place to place over the route. The use of this tank relieves them of the necessity of buying containers of various sizes and also saves the customer the cost of the container. The honey is drawn directly into any kind of pail or jar which the customer happens to have at hand. The tank is tight, so there is no danger of flies or dirt getting into the honey, and if any is left on the return from a trip no harm is done, as it need not be removed until the next trip. While some customers will only buy two or three pounds, many buy a liberal supply, and once the customers are accustomed to look for the honey man little time is required to cover a 25-mile route. Such a tank would be a useful addition to the equipment of an apiary.

Advertising Your Business

By J. D. Gustin.

THE subject of advertising is one that is often neglected in places where it should receive the most attention. At some time in the experience of every man who pursues a single line of business to any appreciable extent the question of advertising will come in for consideration.

In the larger lines of commercial enterprise the advertising problem is delegated to the solution of experts who prepare the matter and determine the methods of its distribution. But in the more limited lines every man is his own ad writer and circulator. And oftentimes, if not always, the subject of advertising is of more importance to the small business than to the large one, for the reason that any waste from injudicious expenditures represents a higher percentage of loss. On the other hand, advertising which brings a quick and profitable return furnishes the means for business expansion and makes possible a quicker success.

The question whether advertising pays is no longer a live one. The live question is what advertising will pay best and bring in the most prompt results? There are many sides to the more or less numerous views of the correct answer, and opinions differ widely. The history of advertising successes reveals many curious features, and if the history of advertising failures had been preserved, doubtless it would have its many lessons.

Nevertheless, there are some fundamental principles upon which practically all agree. The first of these is that the advertisement which "catches the eye" of the prospective customer is the most valuable. Advertisements are now almost "news of the day," so universally do people pay attention to them. Newspaper advertisements, billboards, blotters, stationery, stuffers, etc., have become almost a part of the daily mental menu of the average man whose eyes are open at all times to the things around him. Yet it is a conceded fact that a large portion of it is of a low standard of value compared to the things that really "catch."

By "catching the eye" the advertising man does not mean merely that the advertisement shall pass within the range of vision of the passer by, but that it shall be such as attracts his interest. It may be a picture, it may be a "slogan," it may be a dash of color standing out conspicuously, it may be any one of a thousand or more objects in which it forms a part of the group, but whatever it may be, if it has the virtue of arousing the interest of those who "read as they run" it possesses advertising value of the highest order. The commonplace thing is lost to the reader in the interest which the uncommon arouses.

To the man who aspires to a business beyond the confines of his own personal acquaintance it may be pointed out that there is no way in which he can realize his ambition as quickly and as certainly as by careful and judicious advertising. It has been written that "If a man preach a better sermon, write a better book, or make a better mousetrap than his neighbor, the world will make a beaten path to his door, though he build his house in the wilderness." But the world must first be convinced of the superiority of the product, and herein lies a large part of the value of giving that product a name or mark by which it may be distinguished from other products of like nature.

The miller does not brand his product "Pure Flour," neither does the butcher call his pork and mutton "Pure Meat." But you will find the honey producers often placing their honey on the market with no other distinguishing label than "Pure Honey." Far better it would be, especially for the producers and marketers of high grades, to place some distinctive name on their packages. Even though in a given market there be no present competition, any day may witness invaders of the field, and an established trade by a certain name is less easily disturbed than any other.

It is well for a producer to bear in mind that his custom will call for the best he can produce. His long trade and his profitable trade will be largely in the high grades of his production, no matter what the article may be. On this best feature is his foundation for a business superstructure that will prove his greatest asset.

Everything he uses, everything he does in connection with his business should reflect this superiority. The commonplace does not attract, does not distinguish from other commonplace things. Especially does this apply to such things as will be intimately associated by the public with his business, and particularly to all printed matter. This point has been aptly stated by a very large advertiser in this language:

"Did you ever seriously consider what your printed matter really is? It is nothing less than your portrait—your representation—your business 'front.'

"In these days, face to face transactions are rare. The letter or bill, the document or inclosure, the folder or booklet—these have replaced the personal element.

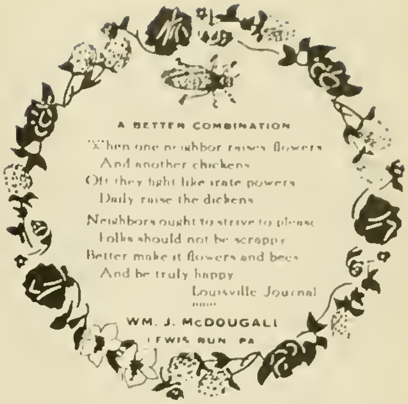
"No business can afford to show itself in the unpardonable garb of indifferent stationery or sales literature. Dignified gentility is always 'correct style.'"

In the printing trade, as in the trade of honey production, there are many novices. Printing is not the simple process that it is generally believed to be. Good printing is the result of a combination of three very essential elements: Good material, good stock and good taste.

Many honey producers, and people in other lines for that matter, regard their printing with much indifference as to its quality, and consider it a necessary burden incident to their business rather than a working asset. Consequently the one thing which they give attention to in the matter of printing is price. Cheapness is everything, quality nothing. To these, of course, the expenditures for printing are nothing more nor less than a dead expense.

As a business proposition a man is no more justified in paying out money for printing which will not earn money for him than he is in paying out money for any other sort of inferior equipment. Like the ancient straw "skep" or the "bee gum" of pioneer days, inferior printing will in a way answer a purpose. But who would think nowadays of beginning a business of honey producing with such primitive methods?

Naturally beekeepers are not always expert judges of the quality of their printing; perhaps in very few instances can they discern the difference between the good and the inferior, and their demands for printed matter have not, perhaps, been sufficient in volume in any one locality to justify the proper equipment of local printers to handle their needs. The obvious remedy for this is to get the work elsewhere.



A BETTER COMBINATION

When one neighbor raises flowers
And another chickens
Oft they fight like irate powers
Daily raise the dickens
Neighbors ought to strive to please
Folks should not be scrappy
Better make it flowers and bees
And be truly happy

Louisville Journal

WM. J. McDOUGALL
LEWIS RUN, PA

Neat and catchy labels and other advertisements bring first sales. It is up to you to furnish the product so as to get repeat orders.

HONEY
HONEY
12412

J. R. HUDSON READY TO START ON HIS HONEY ROUTE

A second fundamental principle in the matter of advertising in general is that of frequent repetition. Quoting from the same authority referred to above:

"It has been said—it has been forgotten! Repeat, please, for memory faileth. Every man knows a thing or two if he could only recall them.

"To build a business reputation you must employ repetition. Only once said is more than twice forgotten. Mentally we are all children, and a good story grows more entertaining with every telling.

"The public must be told and retold about your ability to serve them. And each time the message must be delivered exactly as if it had never before been mentioned.

"On this foundation of essential facts all successful publicity is planned. By the grace of the printing press the message is given visibility and attractiveness that appeals to the eye. But the most favorable impressions gradually fade unless they are revived by the well-timed operation of the 'repeater.'"

This idea of constantly reminding the public of your ability to serve is sometimes called the "keystone of the advertiser's arch." To remind your trade that you are still in business not only has a direct present value, but it recalls to memory previous messages and keeps alive and working a past expenditure that would otherwise be already everlastingly dead and buried.

The best and most successful man in business is he who carries his business message wherever he goes, not only in person, but by letter and by every other act which brings him into association, either directly or indirectly with the public. These reminders are, of course, as varied in form as any other branch of advertising, but for effectiveness and economy, blotters and "stuffers" probably offer the greatest attraction. Yet these must be selected with some discrimination in order to return the results that should be expected from them.

The "stuffer," which to the uninitiated may be described as a printed slip the proper size to be inserted in an ordinary commercial envelope, is one of the cheapest forms of good advertising . It is not far amiss to say that every letter written on fairly good business stationery, costs, with the postage, in the neighborhood of 5 cents. Good stuffers may be had at $2 to $5 per 1,000, according to their style and the amount of matter they contain. This is a range of from one-fifth to one-half cent each. They add nothing to the expense of postage, and their efficiency is abundantly established.

So when you pay 5 cents to send a letter in which it would perhaps be entirely inappropriate to include the least bit of "business puffing," by the expenditure of not more than one-half cent additional you may, in the most appropriate and artistic manner, add your business message.

These are but elementary observations on the subjects treated. The subject of advertising is a large one, and one in which the inexperienced should take the advice of the best counsel available.

Co-Operative Efforts

By John Hendricks.

Read at the Annual Meeting of the Colorado Honey Producers' Association.

I HAVE experienced, first hand, this year some of the difficulties of the manager of a co-operative society. As business manager of our local farmers' union I was asked to find a market for the farmers potatoes. This business was entirely new to me. I procured a list of commission houses that make a specialty of handling potatoes in car lots, and got into communication with them. I then asked the farmers here who had potatoes to sell to list their crop with the union. This they were perfectly willing to do. Next I tried to learn what the farmers wanted for their potatoes. I succeeded in getting a buyer who said he would take all the potatoes the community had to offer at the price the growers had given me. As soon as I acquainted the farmers with this fact the value or potatoes rose in their estimation, and they then wanted 10 cents more per hundred weight. I again set to work to find some one who would pay the additional 10 cents. When I made it known that we had secured a buyer who would take the potatoes at this advanced price, other buyers were coming in who naturally met the price.

The farmers had required that the purchaser send an agent into the community to inspect the potatoes and pay for them when they were loaded. By the time my man arrived practically all the potatoes had been sold to other buyers, who would not have paid the farmers the price they received had it not been for the work the union did. When the buyer I secured reached our community there was only one car of potatoes left for him to pick up.

These farmers had listed their potatoes with the union for the union to sell. When the union found a buyer at the highest price asked, and other buyers began offering the same, the farmers who had listed their potatoes sold to the first buyer that came along offering this price. What complicated matters still more was that they did not report to the union the sale of their potatoes.

After having had this experience, I feel that I want to urge the members of any co-operative association to be more loyal in their support of the manager of the association. Success in co-operative effort cannot be achieved simply by having a shrewd man as business manager. The manager cannot attain the utmost success possible without 100% loyalty on the part of every member of the society. If the manager is anything like a competent man I feel safe in saying that he will strive to be perfectly just to all members, regardless of personalities, and the members of the association make a mistake, therefore, if they allow personalities, tempting offers, or anything else to stand between them and the association. When large buyers come we should do what a fellow member of the Colorado association in this locality did this season when a traveling man for a wholesale house came to negotiate for his crop. Instead of trying to make a sale, this party referred him to our manager.

I consider it our duty to keep the business manager fully advised as to what we expect our crop to be, and when the crop is harvested to report to him at the earliest possible moment the exact quantity of all grades. Then in case the quantity is reduced by local sales, we should keep him advised of the reduction. Not only should we keep him fully informed as to our crop for marketing, but we should also let him know promptly what our requirements in the way of supplies will be for the next season. On the day that the honey flow stops, any one of us could take a few moments to get together our needs in the way of the next season's supplies. If we would do this and send our estimate promptly to the manager it would surely be helpful to all concerned.

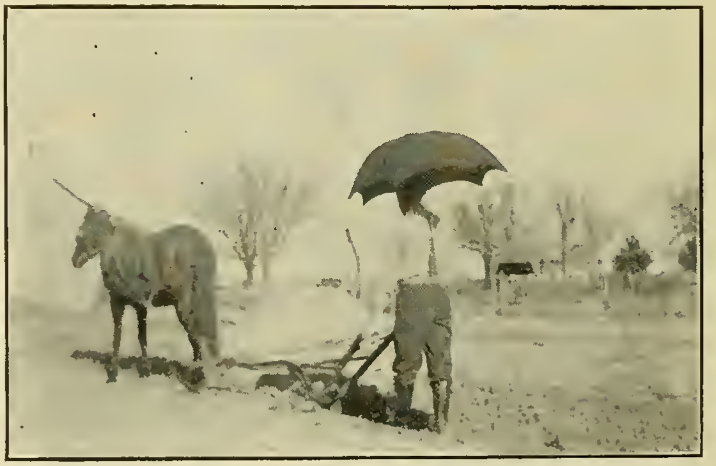
Any co-operative society as large as the Colorado Honey Producers' Association will usually have a volume of business to tax to the limit the ability of its manager. If we as members do not do our part promptly, we handicap the manager, and to that extent injure the association. And since we members are the association, when we do not do promptly and faithfully our duty toward the manager, we injure ourselves.

The Work of the Bee Division of the Dominion Experimental Farms

By F. W. L. Sladen.

(Continued from Page 229).

IT is possible to find locations where all these three principal sources of honey—clover, fireweed and goldenrod and aster—abound. Such locations have from ten to twelve weeks of possible honey flow, and should be ideal for honey production. It seems probable that, taking one year with another, selected places in these regions of successive honey plants may produce larger crops than the districts where the white honey flow is confined to clover and lasts only three or four weeks. In order to find out the value of these and other promising regions, I am starting co-operative experiments with enlightened beekeepers located in them, a colony of ascertained strength being kept on scales and the gain or loss in weight every day during the season being noted, together with the daily weather and



Down in Texas the heat in summer is intense. C. B. Bankston has rigged an umbrella holder for his convenience in the bee-yard and field.

much of the regular information supplied in the reports that we make of the apiary at the Central Experimental Farm, Ottawa, and those of the branch farms, such as notes on the honey plants and the yield per colony, spring count. Two such co-operative experiments have been carried on last year in the north country—one at Thornloe, near New Liskeard, by Mr. William Agar, who reports an average of 23 pounds honey crop per colony, spring count, and the other at a large apiary at Montcerf, Quebec, in the upper Gatineau valley, by Mr. Jos. Martineau, with an out-apiary at Lytton, six miles further north in a moister spot. The average yield for Montcerf last year was only about 65 pounds per colony, spring count, on account of the failure of the fireweed, but the average for the past seven years has been about 132 pounds, mainly from fireweed. In the best year, 1914, the average yield was 263 pounds per colony. In the poorest year, 1912, the average was 142 pounds per colony.

The average at Ottawa in 1916 was 228½ pounds per colony, spring count, the highest on record, and the average for the past four years has been 98.2 pounds per colony, the lowest being 46 pounds, in 1913 and 1914.

I have here charts showing the daily weather and gain and loss of a hive on scales last summer at these three places, and also at Ottawa. These charts show several interesting features. These three places represent large areas which as yet contain very few beekeepers. To get definite results the experiments must be carried on for a number of years to reduce to an average the great variations in crop from season to season caused principally by variations in weather. It is hoped that these experiments will also give us detailed information about the secretion of nectar of the principal honey plants under the different conditions.

In addition to the co-operative experiments above outlined, I placed two colonies for the season of 1916 on a barren sandy plain at Kazubazua, Quebec, where the best yielding species of goldenrod and aster and also blueberries abound. The weather during the blueberry and goldenrod flow was less favorable than average years, no period of settled, fine weather occurring. The total yield of one of the colonies was 241½ pounds, consisting of 64 pounds of blueberry honey gathered at the end of May, of an amber color and peculiar, though not disagreeable, flavor; 118¾ pounds of white honey gathered between that date and the 5th of August, principally from alsike, white clover, raspberry and kalmia, and 58½ pounds of honey from goldenrod gathered after August 5th, and containing a little buckwheat and juice from overripe blueberries. The other colony yielded a surplus of 280 pounds, consisting of 69½ pounds of blueberry honey, 146½ pounds of white honey gathered before August 5th, and 64½ pounds of goldenrod honey gathered later. A colony was also taken to Sully, a swampy location nearby, also containing much goldenrod. Here 34 pounds were obtained from blueberry, 132½ pounds of white honey before August 5th and 54 pounds of principally goldenrod honey after August 5th, a total of 220½ pounds for the season.

An out-apiary experiment to test the value of the sheep laurel, (Kalmia Augustifolia) was tried in the Annapolis Valley N. S. this year. A colony of bees was taken from our station at Kentville and placed in the middle of a bog covered with this plant. The bees gathered a larger surplus than any of the colonies at the Experimental Station. It amounted to 70 pounds of white honey which, however, had a ranker flavor than clover honey. The three best colonies at the station averaged only 35½ pounds. Bogs covered with kalmia occur in many places in the Maritime Provinces and Quebec and in several places in Ontario.

I will dwell more briefly on the honey-producing areas of the Middle West and of the Pacific Coast region.

The dominating feature of most of the prairie and of the dry belt of British Columbia is the dryness of the air and also often of the soil, especially in Southern Alberta and in Columbia. More honey is obtained in wet seasons than in dry. While white clover is probably at the present time the plant from which most nectar is obtained in this region and is spreading, the dry weather is not very favorable to its development and secretion. In moist years in Manitoba and around the cities and towns in certain districts in Saskatchewan and Alberta. such as Indian Head, Sask; Lacombe, Wetaskiwin and Edmonton, Alta., a considerable amount of nectar is obtained from this source. Besides white clover, there are a great number of prairie flowers that secrete nectar. Unfortunately, the majority of these flowers are too deep for the bees to reach the nectar and only bumblebees can obtain it. Two comparatively short-tongued species of bumblebees, Bombus terricola and Bombus occidentalis, bore holes at the base of the corollas to extract the nectar, and honeybees will visit these holes and obtain a little. The amount they get in this way is, however, insignificant.

More honey is obtained from the timber and scrub lands of the prairie than in the open prairie. The timber and scrub lands are usually in moist places and are but little cultivated. If we except clover, all the important sources of honey except alfalfa, which has proved to be of considerable value in Southern Alberta, are wild. Probably the most important wild honey plant of the prairie is the wolfberry, Symphoricarpus occidentalis, a low shrub, very like the snowberry. The nectar is easily reached by the bees, but very little is secreted in dry weather. It flowers in July and early August, and the honey is white and mild-flavored. Another valuable honey plant is the anise hyssop, Agastache foeniculum, flowering in July and early August. It is not found in Southern Alberta or British Columbia, but is well distributed from Winnipeg along the northern margin of the prairie to Edmonton and Lacombe. I found it so abundant between Tinsdale and Melfort, Sask., as to give the prairie here a blue tinge. Unfortunately, the flower is too deep for the bees to reach all the nectar. Another principal source of honey on the prairie is Hedysarum boreale, a plant related to the sainfoin of Western Europe, found throughout the prairie, but commoner northwards. It flowers from mid June to the end of July, and the nectar, though not secreted abundantly under some conditions, is entirely within reach of our bees. Fireweed is scattered through the timber lands and goldenrods of unknown value are plentiful in certain places. Alfalfa has produced about 100 pounds per colony in the apiary of the Experimental Farm at Lethbridge. Here high winds interfere somewhat with the work of the bees.

On the lower mainland of the Pacific Coast we find again white and alsike clover and fireweed to be the principal sources of honey, as in the east. All grow in luxuriant profusion in the Vancouver district, and in a season of favorable weather produce a considerable crop of honey, but during the last two years the honey crop has been a failure in this district, owing to the prevalence of cool, cloudy and wet weather during the honey flow. The beekeepers, however, live in the hope of a good season. Probably an average of 50 to 80 pounds of honey per colony, with good management, can be counted upon. In the Okanagan district, between Salmon Arm and Vernon, and at Nelson, the weather is warmer in summer, and probably an average of 50 to 100 pounds can be gotten from clover, etc., in these valley districts. These valleys are usually narrow and widely separated. In the southeast part of Vancouver Island we get clover and fireweed again. Here the summers are dry and sunny, though cool, and a moderate crop of good honey, sufficient to make beekeeping quite profitable as a side line, is almost certain every year.

Let me say, in conclusion, for the sake of the inexperienced beekeepers here present that the figures of yields I have given have been obtained by good management, and that the past summer was an exceptionally good one for clover honey production in Ontario, and let me repeat that it takes at least two years, usually longer, for a man to learn to manage bees successfully.

If the Bee Division can supply information to those who, after the necessary training, have become successful in getting a fair return in their home locality, information pointing out what locality conditions to look for in order to greatly increase their return, it will have accomplished some good. This is what I am working for in this experiment.

Ottawa, Ontario.

European Foulbrood

By C. C. Miller.

A CANADIAN correspondent is having trouble with European foulbrood and asks what to do. He seems a little uncertain as to the question of Italians and blacks as to immunity; has heard that I was successful in handling European foulbrood with hybrids; wants to know whether he should re-queen, etc.

It is true that I treated successfully hybrids as well as Italians that were affected with European foulbrood and do not feel at all in dread of the disease, although it is possible that a case may turn up almost any time, it being a well understood characteristic of European foulbrood that it is loth to desert entirely anyone with whom it has formed an acquaintance. But if one or two cases should occur in the course of a season it is a small matter to take care of them.

For the sake of this correspondent, and others as well, I will say just what should be done by anyone who finds European foulbrood in his apiary. Suppose the disease has got well under headway before it is discovered, and that a large proportion of the unsealed brood is of a yellowish tint, instead of being pearly white, as healthy brood should be. There will also be larvæ more advanced that are black and dead. The disease has been present so long that it is found in a large part of the colonies, and they have consequently become weak.

The first thing is to strengthen the colonies, and it is perhaps as well to wait until the season is a little advanced and bees are gathering all they need or more. Then double up, making two colonies into one, or, if it is necessary, making three or more into one, for it is absolutely necessary to have only strong colonies for treatment.

The next step is to make the strong colony queenless, killing the queen, for in a bad case it is almost certain that the queen has become too poor to be worth saving. At the same time that the queen is killed a ripe queen-cell may be introduced in a protector, or a virgin just hatched may be given, the cell or the virgin being of best Italian stock. Or, a young laying Italian queen may be introduced ten days after the colony has been made queenless.

That's all the treatment that's needed; just to make the colony queenless for about ten days and then to have the work of laying taken up by a vigorous Italian queen. It is possible that a queen of vigorous hybrid stock might answer, but some think there is safety only in Italian blood, and you may as well have the best.

The disease may break out again, but remember this: no wide-awake beekeeper will ever have a bad case the second time. For he will be on the lookout, detecting the disease before it has had time to become bad. So he will never again have anything more than a mild case, and in a mild case a little different course may be taken, provided a good queen is present. Cage the queen for ten days in the hive, and then free her. The bees will do the rest. But unless the queen is a good one, better treat as in the previous case.

It may be asked whether there are not Italians that are immune to European foulbrood, so that there is no danger of their taking the disease. I wouldn't like to be too positive about it, but I don't believe there is such a thing as bees that are immune to European foulbrood. There are bees that are more resistant than others, at least that will do more than others to clean up the disease; but they're not entirely immune. It may be, too, that in some mild cases the bees will clean up the disease without any help from the beekeeper, but you can't count on anything of the kind as a rule. But keep watch, and cage the queen for ten days before the disease gets much of a start, and you will conclude there's nothing very formidable about European foulbrood.

Getting the Queen to Lay in Wooden Cells

By Jay Smith.

IN Dr. Miller's "Answers" in the American Bee Journal, page 208, June issue, I notice a question by "Wisconsin" asking what the Swarthmore plan is to get the queens to lay in prepared wooden queen-cells, as mentioned by me in the "Beekeeper's Review," page 59, in an article "A plan for Better Bees and Queens." As I have received numerous inquiries concerning this, I believe a short sketch of the Swarthmore Plan would be of general interest to the readers of the American Bee Journal.

"Swarthmore" was the name under which the late Eugene L. Pratt, of Swarthmore, Pa., used to write for the bee papers. Mr. Pratt had developed queen rearing and baby nuclei to a very high state of perfection and was able to do many things that few of us are able to duplicate, and I feel that the beekeepers of America all owe him a debt of gratitude for his excellent work.

His method of getting the queen to lay in the wooden queen-cells is, in brief, as follows: A specially made, small wooden queen-cell is used. These are corded up into a little frame about the size of a 4x5 comb-honey section, after first being waxed the same as a regularly prepared wooden queen-cell. Two of these corded-up frames are placed into a small nucleus hive beside a third frame filled solidly with comb honey, leaving no place for the queen to lay except in the wooden cups. These are a little larger than a drone-cell, but as the colony is so small and needed to replace workers, the queen lays only worker eggs in them.

Mr. Pratt then allowed these eggs to hatch, and removed the wooden cells and placed them in cell holders and gave them to queenless colonies. I have found no advantage in this, as it was more work than the grafting method and no better results are obtained. I believe that if the cells were given to the queenless colony when they contained the eggs the very best of queens could be raised, as everything would be left to the bees, and the human element left out entirely. I have raised a few that way and they were most excellent queens, but the mysterious feature is that the bees will accept only a few, two or three, perhaps, but never more than four, and remove all the other eggs. They seem to think that where there are eggs there must be a queen and what is the use of raising two or three dozen queens when you only want one, and if this one should not hatch according to schedule, "Why, we will ask the queen to lay us another egg and we will try again."

In superseding a queen this same condition is observed. Sometimes eggs are laid in three or four superseding cells, but when they begin to hatch some of these eggs will be taken out. If anyone wishes to experiment on this he may possibly hit upon a certain condition where the bees will be delighted to rear large numbers of queens from the eggs, but so far they have failed with me.

A method that brings splendid results is as follows: Take a colony that has swarmed. Let them go back into the same hive they came out of. Remove their queen. Carefully cut out all queen-cells. Take the royal jelly from these cells and put it in a small glass dish. Dilute it with soft water until it is thin, about the consistency of royal jelly when fed to the larvæ just hatched. Put this into the prepared cell-cups. (I prefer those that are dipped by the Doolittle plan). Now take larvæ about twelve hours old, put them into the cups and give thirty or forty to this colony to be finished. If this is properly done they will accept every one and the lavish manner in which they feed the larvæ is astonishing. The nurse bees seem to be chuck full of pap and are going around looking for something to feed. In a few hours after feeding these cells the young larvæ are fairly swimming in royal jelly.

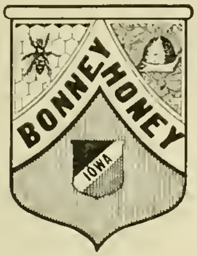
A colony in this condition will not only accept these cells but will finish them in the best manner and will finish several batches of these, and no matter how many you give them they seem to think you did not give them quite enough and will start a few "on their own hook." So you will have to watch and cut these out for if one queen is left to hatch she immediately organizes a gang of wreckers and they begin operations on your fine batch of cells which but a few days ago they were so crazy to build. They will open them up at the side and drag out the young queens with the frenzy of an infuriated mob, and if a queen has developed to the stage that seems to warrant it, the queen at the head of the destruction gang will back down into the opening made in the side of the cell and sting (I believe) the unhatched queen. It has been stated by good authorities that the queen does not do this, but I have seen it done. I believe after hearing this testimony, if the reputation of the witness for truth and veracity is not impeached, an impartial jury would find said queen "guilty." The reader can be the judge.

Vincennes, Ind.

Art in Advertising

BY A. F. BONNEY.

HAVING some idle hours this winter, I began studying a new sticker, and finally evolved a plate which I shall use, in different sizes as a label on cards, envelopes and letter heads. The one I shall use is the one which reads BONNEY HONEY.

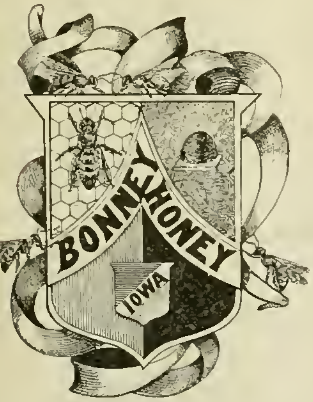


One of the others reads:

BONNEY HONEY
PRODUCED IN IOWA

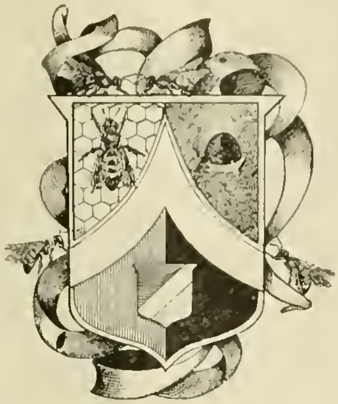
But Produced in Iowa is a long mouthful, so I made the other

BONNEY HONEY
FROM IOWA



and, finally, as IOWA alone tells the story, I evolved the square coat of arms, and observing people may see that I have called on the escutcheon, the bees, honey comb, skep and part of the alphabet. In *Dexter chief point*, the bee, where it logically belongs; in *sinister chief point*, the skep, as it is secondary; BONNEY HONEY in middle, in *honor and fess points;* and IOWA in *nombril* and *middle base points. Dexter* and *sinister base points* vacant. I used the escutcheon of pretense for IOWA, both for relief and to show that the name did not come from anything apicultural.

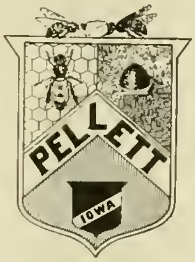
By using this escutcheon in the upper left hand of a letter sheet I can put whatever wording I chose to the right of it. To illustrate:

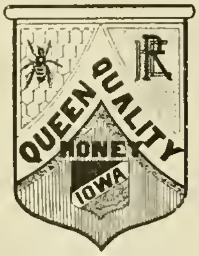


THE BUCK GROVE APIARY
Producers of
BONNEY HONEY
We try to produce the best extracted honey on earth.
And generally succeed.
Buck Grove, Iowa.

The wording of a letter-head is, of course, a matter of taste.

Because Mr. H. E. Roth, of Dexter, Iowa, adopted my suggestion of an alliteration in choosing a name for his honey, I used QUEEN QUALITY as another illustration, and as his name does not appear as in BONNEY HONEY, I use his monogram in *sinister chief point.*





Buck Grove, Iowa.

Southern Beekeeping

BY N. L. STAPLETON

ON May 14th. Mr. J. J. Wilder of Cordele, Ga., who is familiar to the bee fraternity as one of the large producers of honey in the United States, notified me that he had been requested to make a trip down the Appalachicola River and meet with the beekeepers of the tupelo belt, for the purpose of organizing an association, and requested that I make the trip with him.

Mr. Wilder came by and spent Sunday night with me and on Monday morning, the 14th inst., we took the boat at Bainbridge for Wewahitchka, Fla., where we arrived Tuesday morning about day break. At Bainbridge we were joined by Messrs. L. L. and A. E. Lanier of Wewahitchka, who had just sold their crop of honey to a Bainbridge Company. The tupelo honey producers have had an unusually fine season, the flow being exceptionally good and prices satisfactory. On the wharf at Bainbridge we saw over 100 barrels of tupelo honey, and on the wharf at Wewahitchka 41 barrels. Quite a lot had been shipped and there is a good deal yet to go. Our information is that practically the entire crop had been sold.

Mr. Wilder and I are under special obligation to the Messrs. Lanier, who took charge of us on Tuesday and showed us many courtesies. We met quite a number of prominent beekeepers at Wewahitchka, but space forbids the mentioning of all. Among others, we met Mr. S. S. Alderman, now over 80 years of age, who was one of the pioneer beekeepers of that section. Mr. Alderman informed us that he began keeping bees on a commercial scale in 1870. On Tuesday morning Mr. J. K. Isbell took us through his apiary of about 300 colonies all in one yard. Mr. Isbell's apiary is one of the prettiest the writer has ever seen. He uses a nine frame hive taking a Hoffman frame,

THE BEES HELPED TO BUILD THE NEAT LITTLE HOME OF N. L. STAPLETON, OF COLQUITT, GA.

and uses full depth supers, producing extracted honey exclusively. His hives are arranged in rows on stands about 18 inches from the ground. His honey house is on the river bank with his extractor in the second story and tanks underneath. He has a tramway leading from the honey house. to the boat landing.

In the afternoon Mr. J. R. Hunter, who is a son-in-law of Mr. Isbell's, took us in his car down the river about three miles to his apiary, where we also found everything well arranged and convenient.

About three o'clock we met in the Woodman's Hall and organized the Tupelo Honey Producers' Association, Mr. J. J. Wilder being elected President and Mr. J. R. Hunter, secretary.

A committee consisting of J. J. Wilder, J. K. Isbell and C. F. Glenn was appointed to make investigation and submit a plan at an early date for the organization of packing plants and selling exchange to handle the 1918 crop. This committee is to report as soon as they can perfect plans. It was the general opinion of the members composing the association that a corporation ought to be formed to handle this proposition, similar to the fruit exchanges in Georgia and Florida. I failed to secure the names of all of the beekeepers who were present at the organization of this association.

On our return trip we felt very much at home, as we had 275 colonies of bees, and 132 nuclei on the boat. Mr. W. H. Gibson was sending 90 colonies to Bainbridge for the summer flow in that section, while Mr. F. W. Summerfield of Toledo, Ohio, and his assistant, Mr. Guy Gallup, were carrying 185 colonies and 132 nuclei to Toledo for the clover flow. These bees were loaded in a stock car at Bainbridge on Wednesday afternoon and left that night for Toledo in charge of Mr. Gallup. Mr. Summerfield, who has been engaged in migratory beekeeping for the past three years, has been very successful. His tupelo crop this season was 90 barrels of honey. He left 175 colonies and 400 nuclei to remain here for the summer. The nuclei which he was shipping were put up in wire cages each of which held one full depth comb of capped honey and from two to three pounds of bees. He informed us that he had shipped nuclei put up in this way as far north as Canada this season very successfully.

Mr. Wilder took the train at Bainbridge for Cordele, where he expected to remain a day or so before beginning a trip of inspection through his apiaries, located in south Georgia and Florida.

Colquitt, Ga.

Possibilities of Beekeeping in Northern Montana

By L. E. Baldwin.

A NEIGHBOR of ours, having been a beekeeper in Pennsylvania for many years, made inquiry as to the possibilities of beekeeping in Northern Montana. He was assured by a number of the oldtimers that the severe winters, together with the short summers spelled death to the bee and loss to its keeper. This idea has generally prevailed and it surprises many to find proof to the contrary in the shape of well wintered colonies, populous hives and surplus stores of honey, amounting to more than 100 pounds to the colony.

The honey consumed in Northern Montana is shipped in from the Yellowstone and Musselshell Valleys, and from the Pacific Coast states. But with at least three others in this section (30 miles west of Great Falls), we have proven to our satisfaction that honey in sufficient quantities, not only for home consumption, but for commercial purposes, can be profitably produced by anyone who will give a little care and attention to details.

There are, no doubt, in Montana, a number of people who have kept bees in the east and south and doubt the possibilities of success in this northern latitude. We wish, therefore, to give a concrete example of what was realized in our experience.

In the spring of 1915, we secured five stands of bees from a gentleman who had shipped them the previous year from Iowa. They were mostly blacks and hybrids and only three of the five were in modern hives. Foundation had not been used in the frames and the combs were so crooked that we could not control swarming or eliminate the hybrid queens. As we were very busy on the ranch, we could give but little time to the bees. However, in spite of frequent swarming, lack of supplies and proper care, the returns at the close of the season were very gratifying. We secured 400 pounds of comb honey and the number of colonies increased to eleven, besides which several swarms absconded and two were sold. The eleven colonies were put in the cellar about Christmas time and taken out the following March.

We therefore started in the 1916 season with eleven colonies, six of them in modern dovetailed hives with straight combs. As soon as the warm weather of May and June permitted, we transferred the bees from the old hives to new ones. We also introduced two Italian queens and began a war on drone-combs.

The summer of 1916 was unusually short and cold. We had to feed the bees well up into June to keep them from starving, since if they left the hive in search of honey they would chill and die before being able to return. Some colonies dwindled to such an extent that we feared they would be entirely lost. However, the latter part of June proved fairly propitious and with good care the colonies gained rapidly. Alfalfa and sweet clover furnished plenty of nectar and by July 10 the hive bodies were full and the storing of surplus was begun in the supers. The flow continued without interruption for about seven weeks, during which time we so manipulated the hives that we had no natural swarms, but increased the number of colonies to twenty-five. We had also purchased in May) two 2-frame nuclei, which built up rapidly and made strong colonies by fall, as well as securing a large amount of surplus honey. These last two raised our total to twenty-seven colonies.

Having decided to run for extracted honey, we purchased a machine in September and with it extracted 1,000 pounds of honey. This was put up in three-pound glass containers, making a fancy article of merchandise. Besides this, we had some 300 pounds of comb honey, a total of 1,300 pounds, all of which was the product of thirteen hives, as the new colonies made no surplus.

Our honey is water white, very thick and heavy, and is extracted with considerable difficulty.

We believe the above record will

PARTIAL VIEW OF J. K. ISBELL'S APIARY AT WEWAHITCHKA, FLA.

compare favorably with that of any section of the Northern states.

Fort Shaw, Montana.

Producing Saleable Honey

By Arthur C. Miller.

It is easy enough to "keep bees," but to make them pay is a different matter. About the first bit of instruction given to the novice is to get his colonies strong as early as possible, and as most of the instructions have been written by beekeepers in the regions where clover affords the main yield, the instructions have all centered on securing that crop. But there are vast regions where clover is not the main crop and other regions where it does not grow, and where to work to get the colonies strong, early, is labor wasted. To meet with the greatest success the colonies should be strongest when the most desirable flow comes, be it early or late. Langstroth used to say: "Keep your colonies strong," and taken intelligently his advice is right.

There are many ways of doing it, so many that they are confusing to the average beekeeper. The prime requisite is a young and vigorous queen of a good strain, and the secondary is good combs. Given these and not too much manipulation the colonies will be ready when the flowers are.

Different sections produce different honeys, some fine, some good and some indifferent or poor, so the first thing for the would-be successful honey producer to do is to find out at what season the good honeys are secured. This is easily done by sampling the new honey whenever the bees are storing a surplus and tracing the bees to the flowers whence they get it. It is often quite as important to learn when the poor honey is gathered in order that the good may be secured separately from it.

When it comes to determining what honey is "good" many beekeepers will find themselves decidedly puzzled. They think one good while other persons do not like it. One palate is pleased with a strong flavored honey, another wants something almost flavorless, just merely sweet.

In most regions good honey is secured from several sources, some, perhaps, coming early in the season, others late and not infrequently poor honey coming in between. Perhaps the beekeeper does not secure enough of any one kind to supply his customers on one sort, and later gives them of the later crop only to have fault found because the honey tastes differently. The remedy is to hold all of the honey until the end of the season and then "blend" it.

No fixed rules can be given for blending. The proper proportions will have to be determined by experiment. Keep trying until it seems right, then "try it on the dog," which is to say, pass samples of the blend around among people and get their opinion. Eventually a combination will be secured which fits the palate of the community.

It sometimes happens that all the honeys of a region are too strong in flavor to be pleasing for steady consumption and then it is necessary to buy a mild honey from some other region and soften the flavor by blending the strong with it.

The above advice will be understood to refer to extracted honey. This form of honey is steadily crowding out comb honey, and for several reasons. First, successful production of comb honey calls for more skillful beekeeping; secondly it calls for a location where the honey flow is rapid and profuse, and, thirdly, it calls for more pains and care in preparation for market and in delivery than the average beekeeper seems able to give it. Also many consumers do not like the wax and want the honey so it can be used as syrups are used.

But even in locations where the honey flows are not conducive to successful production of comb honey on an extensive scale it is often possible to secure some choice comb honey which commands fancy prices.

The writer has proved the value of the advice above given. He has developed a blend of honeys which seems perfectly adapted to the local market. It is liked; repeat orders and new customers are the order of the day and the honey sells for 20 per cent more than any other honey, on the market. And yet the region where it is produced is not considered a good honey section. As a whole it is not, but some parts of it at some seasons of the year give honey of exceptionally fine flavor, some of them a trifle too pronounced for steady eating, but ideal when used in the right proportion in a blend.

And in a few sections he secures a modest yield of comb honey from each hive, but this honey is a natural blend, the bees getting it from three or four sources at the same time, and the quality is so fine that it commands a very high price and is all engaged a year in advance. It pays to go to a lot of trouble to secure it and even the modest per-colony yield returns in cash much more than the large per-colony yields of some other sections.

Study the honeys of your neighborhood and work your colonies to secure all they can of the best.

Providence, R. I.

Handling Bees at Night

By E. M. Cole.

On page 235 of "Beekeeping,' by E. F. Phillips, is the following statement: "Bees should never be handled at night." I wonder if Dr. Phillips ever tried handling bees at night. During some mild weather last October I examined, and where needed fed, some fifty colonies by lantern light with more comfort to myself and seemingly less disturbance to the bees than ever resulted from a daytime handling.

I kept the light back of the hives, opened them carefully and used but little smoke. A few bees crawled out at the entrance, but practically none from the top of the hive. The bees gradually drew down below the top bars, probably to better protect the brood from the chill air.

To be reasonably sure each had a queen, the brood-nest was opened enough to find brood.

One hundred solid combs of white clover honey had been saved and wherever needed were inserted next to the brood-nest.

I had never before saved combs of honey for fall or spring feeding, and what a pleasure such feeding is to both bees and beekeeper!

This spring we had some mild weather about the twentieth of March. Fifty colonies were again examined by lantern light, and without the least trouble. A veil was not necessary, and with some colonies not even smoke. They just settled down on the brood and stayed there.

I have never tried handling bees at night in hot weather; they might then have more tendency to crawl out at the top of the hive.

Audubon, Iowa.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

COLOR OF PURE BLOOD ITALIAN DRONES

What should three-band Italian drones look like? Are they uniform in appearance? Should they run darker than the queens? I am trying to Italianize, and find it difficult.

Mrs. M. C. Long.

Italian drones vary greatly in color, with little reference to the color of the queen, and indeed there is not entire uniformity in the appearance of the queen. Some Italian queens are as dark as black queens, while others are light; yet one may be as pure as the other. So in trying to decide as to the purity of blood the appearance of both queen and drones is pretty much a negligible quantity. The test is in the appearance of the workers. If they have three yellow bands, that is all that is required. It should be added that one of the three bands, the one toward the head, is rather indistinct, and if the bee is quite empty of honey this third band may hardly be noticed.

You say you find it difficult to Italianize. It is a matter of time and patience generally, for with black or hybrid blood all about you it is impossible for you to have your young queens always purely mated, and the only way is to breed constantly from pure stock, buying a new queen as soon as the old one dies. You can also help matters by suppressing all drones except the Italians. But if the number of colonies in your apiary bears a small proportion to those of impure blood surrounding you the work of Italianizing will be a matter of years.

Yet there is one encouraging item. It is that the first cross makes as good gatherers generally as the pure bloods. One very successful beekeeper makes no pretense to keeping pure stock, but rears all his queens from pure mothers, regardless of how they may mate.

GET EVERY COLONY READY FOR SUPERS

Referring to "Notes by the Way," on page 243, the rule practiced by Dr. Miller still holds good, at least in this locality.

It is true that if the bees are left entirely without attention some colonies will not be ready for supers for some time after white clover begins to bloom, while others will swarm before that time unless they be given room.

But why let your bees remain in such a condition? Why not equalize your colonies and have them all ready for supers at the beginning of the white clover harvest?

That is what we aim to do, and it is seldom that every colony in our apiary is not ready for supers when the white clover harvest begins.

GETTING QUEEN CELLS STARTED

For the every-day beekeeper there is, perhaps, no better way to get queen-cells reared than the one given in "Fifty Years Among the Bees," of which such a beautiful picture was given not very long ago on the first page of the cover of the American Bee Journal. That was a picture of a frame of cells gotten up by the Dadants, and Dr. Miller thought they beat him at his own game.

But that plan requires some preparation in advance, and it may happen at some time that one does not want to wait to have a new comb built on which to have cells started. Or, if one has only a few colonies, one may prefer to have cells started on one or more of the regular brood-combs. An easy way is to take away the queen with two or three frames of brood and adhering bees from a strong colony having one's best queen, leaving the bees to start cells anyhwere they like. The trouble is that they will like to start them in a number of frames instead of in one particular frame, and will be pretty sure to have some of them started on opposite sides of the same comb, so that they will interfere with one another in the cutting out.

To avoid these troubles Dr. Miller decided to try having cells built on a comb lying horizontally. A good deal was said about this plan a few years ago, but for some reason it does not seem to have gone into general use, possibly because appearing too troublesome. As we have used it, however, last year and this, it is very little trouble, and as some of the sisters may want to try it, it may be well to tell in detail just how it is done "in this locality."

The machinery necessary is a shallow super to contain the one comb lying flat, and a rack to support the comb. The super is the width of the hive, three inches deep, and the inside length is a little more, say one-quarter inch more, than the length of the top bar of a brood-comb. The rack is a sort of ladder having two side pieces 14 inches by 1¼ by ⅜, and three rungs 9x1x⅜. The long or side pieces are nailed upon the ends of the rungs, one rung being in the center and each of the others 4 inches distant from the central one. When in use this ladder is to be laid upon the top bars of the frames in the brood-chamber, and the edges of the rungs come flush with the edges of the side pieces on top, leaving one-quarter inch space below between top bars and rungs. That is so that the rungs will not be glued to the top bars. Let it be especially noted that all these measurements are more or less by guess, and it is possible, indeed probable, that some of them might be changed to advantage.

Having the shallow super and the rack ready, we are now ready to go to work. We fill a hive with combs entirely empty, or they may contain some honey, or even sealed brood, but no unsealed brood. On the whole it is perhaps better not to have any brood at all. Over this hive is placed our shallow super, and in the super is placed the rack, being sure that the rack is right side up, so that there is a space between the rungs of the rack and the top bars. On the rack is placed a frame of brood taken from the colony that has the best queen, this frame being one that contains the largest proportion of brood just hatched from the egg. If there is any difference in the two sides let the best side be down. Call this hive A. Set it in place of B, which may be any strong colony, and set B on a new stand. Brush into A all the bees from three of B's brood-combs, of course taking care not to get the queen. Then cover up B and leave it for ten days, when the cells will be ready to cut.

You will now find your advantage in the fact that instead of having to handle and examine all the combs of a colony, you have to do with only one comb. Moreover the cells are on only one side, standing straight out from the face of the comb, and with the small blade of a pocket-knife you can cut out a cell and leave a hole only a third as large as when the cell is built on a comb hanging in its usual position. It is claimed that you get more cells in this way, which may be true.

Someone may say "But you have said nothing about preparing the comb by scraping to the bottom alternate rows of cells, as has always been directed." No, we do nothing of the kind, simply using the comb as it is. We are not convinced that the other way is any better. At any rate we get good results and are saved the extra bother.

INTRODUCING QUEENS

My experience may not be conclusive, as I have only used it this year, but I have lost no queens introduced in this way and I find it much less "messy" than the honey method. The first queen came from Alabama, a Golden. I felt very choice of her. I seldom use smoke about my bees. I

A JULY SWARM CAPTURED BY S. L. CORK, AT PERU, ILL.

hate it much worse than the bees do, also tried it for introducing the year before and failed. This is what I did this year: I hunted out the queen in the hive I wanted to re-queen and took her and a frame of brood to a new place. I filled my aluminum clothes sprinkler with water and into it I put enough oil or anise to make it smell strong. I opened the hive and sprinkled the frames thoroughly, enough so that I knew some of it ran down onto the bottom-board, and I sprinkled the entrance. I then took my queen cage and sprinkled that so that queen and attendants were well sprinkled, then I opened the cage and tucked it in between frames where the frame of brood had been taken out, put on the cover, contracted the entrance and left them. Next morning I examined them and found them all one happy family.

The next experiment was similar except that I took two frames of brood, bees and honey and placed them in an empty hive, sprinkling with peppermint water instead of anise, this hive was placed on a new stand. Again I placed two frames of brood sprinkled with peppermint water on the old stand, moving the old hive away. I felt a little doubtful of how the returning field bees would like the innovation, but apparently finding no mother of their own and rather liking the flavor of the new hive, they decided to do the best they could with what they had left and so made no trouble. Perhaps next year I may lose them all, but it seems to me that the principle of the thing is the same as that of the honey method, only that it is much less sticky to perform. I prefer the peppermint, as the anise might possibly entice robbers. I like peppermint in my winter candy, also. JEAN WHITE.

MISCELLANEOUS NEWS ITEMS

Pennsylvania Meeting.—The Pennsylvania Beekeepers' Association will hold a meeting at the apiary of L. K. Hostetter, five miles northeast of Lancaster, on August 16. All persons interested in beekeeping are invited to attend.

L. K. HUBER, Chairman.

Eastern Massachusetts Meeting.—The Eastern Massachusetts Society of Beekeepers is to hold its annual field day at the Independent Agricultural School at Hawthorne (Danvers), Mass., on Saturday, August 11.

The Annual Field Meeting of the Chicago Northwestern Association will be held on Tuesday, August 14, at the home of the apiary of the President, Mr. E. S. Miller, of Valparaiso, Ind. The day will be taken up with various talks and demonstrations of interest to beekeepers. The Ladies' Aid of the Christian church will serve dinner at noon, at the church, two blocks north of the court house. The dinner will be 50 cents a person. All who expect to attend will notify me at least three days in advance, as the ladies require that much time and number expected so they can prepare accordingly. The apiary is located just outside of the city, east, about a mile from the depots. Mr. Miller or myself will try and meet all incoming trains till noon with autos and escort beekeepers to the apiary. Valparaiso is located 44 miles southeast of Chicago, on the Grand Trunk, Nickel Plate and Pennsylvania railroads. We also have interurban lines from Crown Point, Gary, Chesterton, La Porte and South Bend. We will not meet interurban cars, but if you wish to ride to the apiary call phone 571 R and we will meet you. President Miller is the man who operates 400 colonies of bees in five yards, working on an average of two days a week. He will show and explain his system of management, which you will all want to see.

JOHN C. BULL, Sec.-Treas.

Death of Mrs. H. S. Duby.—Mrs. H. S. Duby, of St. Anne, Ill., passed away July 3, aged 51 years. She was a beekeeper from youth. While still in her teens she persuaded her father to adopt the movable-frame hive, and she did practically all the transferring alone, in the operation saving $30 worth of beeswax. When she married H. S. Duby she married a beekeeper, and together they went into beekeeping in earnest. She never wore gloves or veil and seldom used smoke, as she knew how to handle bees so as to provoke them the least.

Mrs. Duby often entertained beekeepers, including the editor, who still remembers her charming hospitality. She will be missed by many who were in the habit of calling on her during "swarming time." Her husband has the deserved sympathy of the fraternity.

Ohio State Meeting.—On Thursday and Friday, September 6 and 7, at Wilmington, Ohio, will be held "Ohio's Greatest Field Meet." The full program follows:

Thursday, September 6

10:30 a. m.—

Prayer—Rev. J. J. Richards.

Minutes of Medina meeting—Ernest Kohn, Grover Hill, O.

President's Address — Melville Hayes, Wilmington, O.

Educational Value of Inspection Work—A. C. Ames, Weston, O.

Appointment of Committees.

1:30 p. m.—

Cuban Bee Industry—D. H. Morris, Springfield, O.

Queen Rearing—J. P. Moore, Morgan, Ky.; Fred Leininger, Delphos, O.; Mel Prichard, Medina, O.

General Discussion—Free for all.

7:30 p. m.—

Prevention of Swarming—C. P. Dadant, Hamilton, Ill.

What Ohio State University is Doing for Beekeeping—Jas. S. Hine, Columbus, O.

Successful Beekeeping—E. R. Root, Medina, O.

Friday, September 7

9:30 a. m.—

Meet at Walker Memorial Building for automobile ride over Clinton County, under auspices of Wilmington Commercial Club.

Opera House , 1:30 p. m.—

Mother Goose's Melodies (Paraphrased)—Mrs. G. P. Phillips, Washington, D. C.

Flowers (Pollenization and Cross Pollenization)—E. R. Root, Medina, O.

This meeting will be attended by pupils of Wilmington Public Schools under charge of Prof. E. P. West, Superintendent, and by the ladies of Wilmington.

Walker Memorial Building, 7:30 p. m.

Wintering—Dr. E. F. Phillips, of Bureau of Entomology, Washington, D. C.

Question Box—E. R. Root, Medina, O.

Sweet Clover as Chicken Feed.—One of our French correspondents, Mr. Lefeuvre, suggests the use of melilot hay, ground fine and mixed with bran, as feed for chickens. He bases the advice upon the experiment of a miller who tried it.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Markets

Semi-Monthly News Bulletin

Honey—No. 3

Washington, D. C., July 13, 1917.

This is the third of a series of similar reports which will be issued by this office on the first and fifteenth of each month during the honey shipping season. The information is secured by representatives of the office located in the markets, and is transmitted by wire to Washington. For the present the bulletins will be issued only from Washington. These bulletins will be sent by mail free to any persons requesting them. All inquiries should be addressed to Chas. J. Brand, Chief.

Telegraphic Reports From Today's Markets—Jobbing Prices

(L. C. L. prices on large lots to jobbers).

New York—6 barrels Florida, 38 barrels and 17 cases West Indian, arrived; no comb honey arrivals. Extracted stock: market active, demand good, stronger; active buying for Italian export, resulting in wide range in prices; Southern: 12-13c; some sales reported at 15c; West Indian, 12-14c; some 15c per pound. Beeswax: Arrivals unreported; supplies adequate; demand light; yellow, mostly 45c; dark, mostly 43c per pound.

Kansas City—Local receipts, about 25 cases new honey; old crop, supplies practically exhausted; demand good, movement moderate, market firm, all sales in small lots. Native Missouri old stock: Firsts, 24-section cases, mostly $4@4.25; seconds, supplies exhausted. New stock: firsts, mostly $4.25. Supplies extracted stock exhausted. New crop late this year and will be very light.

Chicago—No car lot arrivals; Supplies practically exhausted, not enough to make a market. First shipment new, few cans Minnesota; rather light color, 12c. Old extracted: few sales; 12@13c per pound.

Cincinnati—1 car California, 32 crates Georgia, 75 pounds each, arrived. Light local receipts. Market very unsettled, few sales. Comb honey: old light amber, $3.60 per case; no new stock on market. Extracted, old stock: dark amber, 13c; light amber, 15c. Nearby: new honey, few sales; small lots; cash paid to beekeepers, extracted dark honey, amber, 8½c per pound. Nearby honey expected to move heavily in two weeks.

Philadelphia—33 barrels Southern extracted; no imports; no comb honey arrived; no demand, no sales. Quotations reported are merely asking prices. Extracted: jobbing in barrels: Southern, 10@12c; California, light orange, 60-pound tins, 13c per pound. Comb honey, no quotations.

St. Louis—No fresh arrivals. Bright amber in barrels, 8½c; in cans, 9@9½c; dark amber, ½@1c less per pound. Comb in case: amber, 10@12c per section; dark and inferior, 9@10c. Fancy clover, 14@17c per section.

Minneapolis—No new stock arrived. Supplies old stock practically cleaned up. Few sales.

St. Paul—No new stock arrived. Supplies old stock practically cleaned up. No sales.

Denver—Unreported.

CHARLES J. BRAND, Chief.

Alsike Clover.—Geo. W. Williams, of the United Honey Producers, suggests that every beekeeper make it his business to learn of the combination of grasses in which is included alsike clover, that will make the best hay and then try to get these planted by local farmers by publicity in the local press. Alsike clover is a mighty good honey yielder, as those acquainted with it will testify.

TO WISCONSIN BEEKEEPERS

Owing to the high price of food products the 1916 honey crop of the United States is short and buyers will pobably pay better prices for the 1917 crop.

It is the duty of every Wisconsin beekeeper to produce as much honey as possible this season. In order to do this, allow but little swarming or increase in colonies and furnish an abundance of room in the hives. In case your bees, or those of your neighbors, are diseased, you should report at once to the State Department of Agriculture at Madison, so that they may be treated in time to secure honey crops this year.

The U. S. Department of Agriculture has promised to include bees and honey in the several market reports. Dr. E. F. Phillips, of Washington, D. C., has issued many valuable circular letters to beekeepers of late and if you have not received them, let us know at once, so that your name may be placed on the mailing list.

In order to demonstrate the possibilities of Wisconsin beekeeping the State Beekeepers' Association is offering the following premiums:

Comb Honey—For the greatest number of pounds of comb honey in sections from single colonies of Wisconsin bees, not including any increase of colony, four premiums will be offered, as follows:

1. 1917 Revised Edition of ABC and XYZ of Beekeeping, 830-page volume.
2. Rauchfuss foundation cutting box with special knift.
3. 1917 Edition of American Bee Journal.
4. Three pounds of thin comb foundation for comb honey.

Extracted Honey—For the greatest number of pounds of extracted honey in glass bottles from single colony of Wisconsin bees, not including increase of colony, four premiums will be offered, as follows:

1. 1917 Revised Edition of ABC and XYZ of Beekeeping, 830-page volume.
2. Frame wedge driver and wire embedder form. Very useful.
3. 1917 Edition of American Bee Journal.
4. Four pounds of brood foundation, prepaid.

Apply to N. E. France, State Apiary Inspector, Platteville, Wisconsin, for rules governing the contest.

The first premium lot of comb honey (also first premium lot of extracted honey) is to be sold at market price September 3 (Labor Day), and will be on display September 10-15, at the Wisconsin State Fair. After that date it will be on display at the University of Wisconsin and at the next State Beekeepers' Convention at Madison. A full report from each contestant will be required, copies of which will be printed and distributed among members of the State Association.

Cross Bees.—After several years of effort to weed out the cross bees in my apiary I was congratulating myself that I had about succeeded. Every colony was headed by an Italian queen last season. After the heavy honey flow of 1916 many queens were superseded and several mismatings resulted. Of course there were some cross bees again this season, but not many. Following the flow from dandelion came a time when little honey was coming in, then, bless you, they were all cross. The hybrids were as cross as the very old Nick, and the Italians, which I had been showing off by opening the hive without smoke, were little better. The only exception which was conspicuous in the whole yard was a colony of bright goldens. Here we have been talking about bad tempers as the predominant golden trait, but this colony is gentle when everything else is on the war path. This particular colony is from a yard where special care has been taken for years to breed only from the gentlest colonies which are at the same time good honey gatherers. It really looks like it is possible to accomplish something very definite in the improvement of bees by careful selection, within a comparatively short period of time.

Nebraska.—I have just returned from a 600-mile auto trip through Eastern Nebraska. The clover becomes more abundant as one goes north. In the vicinity of Omaha it is very spotted. In some places white clover seems very abundant, while a little farther on there is very little. The same is true in southwestern Iowa. The Elkhorn valley from Fremont to Norfolk offers some very attractive locations which are apparently entirely unoccupied. If appearances are not deceptive there is room for thousands of colonies of bees in this valley, with dependable forage in sight. Dandelions furnish an abundant early flow, followed by white and alsike clover. What the sources of fall honey may be I could not entirely determine, but a fall flow is quite likely in a valley of this kind.

White clover is extending its range westward quite rapidly. Near the little town of Chambers in the southern part of Holt county, are some neighborhoods where both white and alsike clover are present in abundance. Sweet clover is also growing commonly along the roadsides and to some extent in the fields. There are but few localities all the way from Omaha to O'Neill where sweet clover is not common along the roadsides. Judging from reports from this section the yield is heavier and more dependable than further east. There is a home market for hundreds of tons of honey right at hand in the Elkhorn valley. With forage and market at the door, it is surprising that more beekeepers are not to be found there. F. C. P.

Virginia Creeper.—There are numerous plants which secrete nectar in abundance which would be valuable sources of honey if only they could be planted in sufficient quantity. On the Fourth of July the Virginia creeper on the arbor in our dooryard was in bloom. There were hundreds, yes thousands, of bees humming among the blossoms. There are few plants that attract bees in such numbers to a small amount of bloom as does the Virginia creeper.

This plant, Ampelopsis quinquefolia, also known as American ivy and sometimes as woodbine, is an attractive climber which is very valuable for covering porches, trellises, etc. The flowers are small and unattractive except to the bees, but the foliage is sufficient to recommend it to those wishing climbing vines. Few plants are as hardy in our climate as this.

New York Honey Producers—The Western New York Honey Producers' Association will hold its annual field meeting and basket picnic on Saturday, Aug. 11, 1917, at the apiary of J. Roy Lincoln, which is located on the Saunders Settlement or Niagara Falls-Lockport road just outside of the city line, or ten minutes' walk from the north terminal of the Niagara Falls, Eleventh Street trolley line.

There will be demonstrations of extracting with a power outfit and addresses on the use of honey and the various phases of beekeeping.

Bring your basket lunch and your friends, honey consumers as well as beekeepers. A cordial welcome to all.

WILLIAM F. VOLLMER, Sec'y.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Evaporating Honey

Last summer I extracted a quantity of white clover honey from sealed combs. The honey seemed to be of excellent quality; but when I weighed it I found that it weighed a scant 11 pounds to the gallon. According to my information it should weigh 12 pounds to the gallon. Ought this honey to be evaporated until it is of the required density before it is offered to the trade?

If it should be evaporated, what is the best way of doing it? MINNESOTA.

ANSWER.—Honey as thin as 11 pounds to the gallon, no matter how good the quality, is in danger of souring, and having regard to your reputation and future sales, it will not be the wisest thing to put it on the market.

It matters little how you evaporate it so that you do not injure it by overheating. If the quantity is not very large, you may set it on the back of the stove, where it may be heated through several days without ever getting very hot. You may also set the vessel containing the honey in another vessel containing water, and then you can set it in a hotter place.

Transferring—Ripened Honey

1. I caught a large swarm of bees and put them in a box with a few frames in it. They took very well to their new home and built some beautiful combs from the cover down. I have ordered a hive from Dadants. Would you advise me to transfer my swarm to the new hive or should I save the hive for another swarm which I think will come from this one? I examined the comb they built and saw the most of them were already capped. I caught the swarm April 7, and they certainly have worked wonders since that time.

2. What is meant by "honey should not be extracted when first harvested. Give it time to ripen." How long will it take to ripen and how will I know when to take it out? LOUISIANA.

ANSWERS.—1. If the colony is likely to cast a swarm this season, you may do as well to leave the bees as they are and hive the swarm in the new hive. Then in three weeks you can break up the old hive. But if it was a *swarm* of this year that you captured, it is not very likely they will swarm before next year. If you have had some experience in transferring, it may be better to transfer as soon as you can; otherwise it may be better to wait until the colony swarms next year. Something, however, depends upon the frames, in which the combs now are. If they are such that they can be lifted out easily, the work of transferring would be made easier, making it advisable for you to transfer at once. You see it's a bit hard to advise what is best without knowing all the circumstances.

2. When honey is first gathered it is very thin, and unfit to be extracted. Gradually it becomes thicker until it will weigh about 12 pounds to the gallon, when it is called "ripe." When very ripe it strings out in threads. When you have a little experience you will know by sampling it whether it is fit for extracting. In the meantime you are pretty safe in saying that honey is "ripe" when it is all sealed, and indeed there is little risk in extracting it when three-fourths sealed.

Diarrhea

1. I lost two colonies of bees last winter, although they had plenty of honey. At the entrance of the hive there were brown specks, and when I smashed one of the dead bees there was a brown substance that came from it. What was the matter with my bees?

2. Will this hive with its comb and honey be all right to use again? NEBRASKA.

ANSWERS.—1. The bees were apparently affected with diarrhea, and the brown spots at the entrance and the brown substance you saw when you smashed a dead bee were the same thing, that is the contents of the bees' bowels. The best cure for diarrhea is for the bees to have a flight so that they may have a chance to discharge the contents of their intestines. Of course, you are dependent on the weather for that. Have your colonies go into winter quarters strong in bees and well supplied with good honey, give them good protection, and you will have done your share toward preventing an attack of diarrhea.

2. Brush out the dead bees, scrape the filth off the frames, and it will be all right to hive a swarm into the hive.

Queenless Colony—Pound Packages Put on Old Combs

1. How can a beginner tell in early spring that a colony is queenless?

2. We are getting bees (3-pound packages) with queen shipped in from the extreme South. We intend turning them on 10-frame old combs which have plenty of honey, but some of them are moldy. Would this be all right? IOWA.

ANSWERS.—1. You cannot tell until time for the queen to begin laying; but that is quite early. Indeed, there is sealed brood in the hive as early as you would be likely to want to look into it. If you find this brood is sealed with flat cappings, you may count that a good queen is present. If you find brood in worker-cells with cappings rounded over, looking like little bullets, then a drone-laying queen is present. If you find some of the brood in worker-cells sealed flat and some of it rounding, that indicates an old, failing queen, and if a large proportion of the brood is shown to be drone-brood by the rounding cappings, you may about as well count the queen worthless and unite the bees with others.

2. Yes, but it will be better to set these combs under or over a strong colony first to get the bees to clean them up. If too dirty the combless bees may desert.

Pure Honey

Some persons in my community are still ignorant on the honey question, and say it looks too much like manufactured to be pure. A honey sign that I had printed runs as follows:

PURE HONEY
Produced and sold here.

I was told that they could have me arrested for printing *pure* on it. What do you say? In my opinion they cannot. What is *honey* if it isn't *pure*?

My apiary is open to inspection. My honey is open to analysis. There is $100 for any one finding my honey not pure and sanitary, and not made by the bees. What do you say about this? ILLINOIS.

ANSWER.—If you are selling the honey that the bees gather from the flowers as pure honey, it is pure foolishness for any one to say you can be put up for advertising it as such, either in a newspaper or on a signboard.

Taking Bees from a Bee Tree

I am inexperienced in keeping bees, but have some bee trees on my place along the Bellefourche river. There are bees in cottonwood trees near here.

1. Can I take the worker-bees from a tree with a bee-escape by placing a new hive near by for them to enter?

2. If done in June will the young bees left in the tree with the old queen build up another colony?

3. How soon could I move the hive with the bees to another place two miles away?

4. Please give the best method of taking the bees where the trees can be cut.

5. What is the best method of taking the bees if my method will not work? I wish to try and get a start of bees from these bee trees.

6. Does smoke destroy bees? Last summer, in a large cottonwood tree near by, was what seemed to be a very strong colony working well. Later in the season I noticed a snake curled up in the hole where the bees had been, but they were all gone. The bees from another large tree not far from this one also disappeared. If the snake took the bees would they leave any honey in the tree? SOUTH DAKOTA.

ANSWERS.—1. You might succeeed, but you would have only field bees, which are not the very best for building up a colony?

2. Yes, if the colony is at all strong it will soon recover from the taking away of its field force.

3. You could move it just as soon as all the field bees were trapped out, which would probably be in two or three days.

4. It is a matter of gumption more than of fixed rule. Cut down your tree so as to smash the combs as little as possible; cut off above and below where the bees are, and then you have much the same as a colony in a box-hive.

5. I don't know enough to give you any satisfactory way of getting the bees without cutting the tree. If any one does, he can have the floor. [If the colony is in a part of the tree trunk where it can be easily reached, you may drive them out by cutting a good sized hole above the hollow where the bees are and one below. Then drive them out by using smoke at the lower hole. After that you may do as you like with the combs. The driven bees will probably cluster near by and you may hive them like a swarm.—EDITOR.]

6. I have seen snakes in bee-hives, but I doubt their doing any harm to the bees. *If* the snake should take the bees, my guess would be that he would not take the honey.

Untested Queen—Observation Hive—Frame Spacing

1. Is wild raspberry a good honey yielding plant?
2. Is an untested queen mated?
3. What would be the best way to start a one-frame observation hive?
4. How often, and what is the best way to renew a one-frame observation hive? Would it be all right to give the bees a new frame with foundation in it?
5. Could I take two frames and place one above the other in an observation hive to give the queen more laying room?
6. Should the bottom-board be painted all over, that is on the inside also, or would the paint affect the bees?
7. My bees are located about one-half mile east of Lake Michigan. Would the bees gather more honey if they were a couple of miles farther east?
8. Are there any frames that space 1½ inches from center to center? MICHIGAN.

ANSWERS.—1. Excellent.

2. Yes, and she has begun laying, but her bees have not yet hatched out.

3. Take a frame of brood with queen and adhering bees and put it in the hive, brushing into it also the bees from another frame. Fasten the entrance for two or three days, so the bees cannot return to their old home, and if it is hot it is better to put the hive in a cool cellar until time to open the entrance.

4. There is no need of any renewal so long as there are neither too few nor too many bees to cover properly the frame. There is some danger of the bees absconding if you should give a frame of foundation, but if the bees become too strong you could give a frame with very little brood in it. If they become too weak, exchange their comb for one containing more sealed brood.

5. Yes.

6. It is not usual to paint the inside, but it would not hurt the bees.

7. Like enough they would, if the honey plants are equally distributed over the land.

8. Thousands of frames are so spaced.

Royal Jelly—Robbing—Beekeeping Schools—Location

1. What is royal jelly?
2. Does a young queen always emerge from the cell before the old queen leaves with a swarm, and does the queen lead a swarm or come out behind and drive the swarm out?
3. What is the best way to unite bees, in the parent hive to prevent them from swarming again after they have just swarmed or just when they are preparing to swarm?
4. In speaking about the bottom-board in the May issue in your answers, what do you mean by bottom rack?
5. I went to my apiary a few days ago and found my bees were robbing one of my colonies of bees. I looked on top of the hive that was being robbed and found a queen. Do queens ever leave the hive after they have mated except when they swarm, or is this a rare thing?
6. Is there any way of telling the age of a queen by looking at her?
7. What would it cost me to join the State Beekeepers' Association of Illinois or the National Beekeepers' Association, and of what use are they?
8. If a swarm of bees goes over in my neighbor's orchard, am I allowed according to law to hive the swarm?
9. Are there any schools that I could attend to learn more about beekeeping, and if so which one would be the nearest and best for me to have had some experience in beekeeping?
10. Which one of the three Pacific States is the best for beekeeping, Washington, Oregon or California, and in what part? ILLINOIS.

ANSWERS.—1. Royal jelly is the cream-like food the nurse-bees feed to the larvæ in queen-cells for about five days, from the time the larva hatches out of the egg until it is sealed over.

2. The old queen leaves with the swarm a week or so before the first virgin queen emerges, and she may be among the first or the last, or anywhere in the middle of the swarm.

3. You can return the swarm and kill the old queen and destroy all queen-cells but one.

4. It is what its name implies, a small rack that prevents the bees from building down comb, and yet allows much ventilation. You will find it fully described in "Fifty Years Among the Bees."

5. A laying queen is never supposed to leave the hive except with a swarm. Your finding a queen on top of the hive was an unusual occurrence. It is possible that the colony was overcome by the robbers, in a badly demoralized condition, and that the queen rushed out of the hive with the bees. And maybe that wasn't the case at all.

6. No, although as you become experienced you will see a difference in the appearance of an old and a young queen. The difference is hard to describe; but I might say the young queen is fresher looking, perhaps because of fuller plumage.

7. By paying $1.00 you can become a member of the State Association, and by paying $1.00 you can be a member of the State and the National Association. By becoming a member you receive a valuable yearly report; you are shoulder to shoulder with other beekeepers in using an influence to obtain advantages from the State and federal government that could not be obtained without organized effort. If freight rates on honey are unjust, no amount of effort on your part individually will have any effect toward righting it, but they may listen to an association of beekeepers, and the addition of your name to swell the membership will increase the influence of the association.

8. Yes, and if you do any damage by it you must pay for it.

9. The subject is taught at the Agricultural College at Ames, Iowa, in charge of an excellent man, Prof. F. Eric Millen.

10. More honey is produced in California, but there are good locations in the other two. Imperial Valley, Calif., is one of the best localities, but a poor place for you if you are looking for a new locality, as the ground is fully occupied.

Selling Other Peoples' Honey

1. Would it be lawful for one to buy honey in the market, re-label it with one's own labels and sell it to consumers locally?
2. Or simply destroy the original label and sell without label to local consumers? MISSOURI.

ANSWERS.—1. I don't suppose you would be likely to get into any legal trouble; but if your label reads "Produced by" there is a possibility of it. At any rate it would hardly be good business policy.

2. There could be no trouble from that.

Fertilizing Queens

I recently picked up a copy of Mr. Frank C. Pellett's book on beekeeping, and noticed therein a statement that Prof. Francis Jager, of Minnesota, has published in some issue of the magazine "Science," an account of his successfully fertilizing a queen bee in confinement. Would you kindly give me a brief description of the means used by Prof. Jager. WASHINGTON.

ANSWER.—I have no information as to particulars, and have not been very much interested in the matter, for in private conversation with Prof. Jager I understood that it was hardly a thing for common use.

Paralysis.

I have 40 colonies of bees and some of them are affected with a mania or disease to kill. I would like to have some advice on this. They act exactly as a strong colony would if attacked by persistent robbers, only there is no excitement, there being at all times several hundred dead bees in or near the entrance to the hive.

This commences in April and continues all summer. On cold or rainy days, when there is no flight the killing goes on just the same, the entrance sometimes becoming nearly full of dead bees, and on other days there is at all times two or three bunches fighting on or near the entrance, with dead and dying bees scattered all about.

Have just two colonies affected this season so far, and there were two last season. Of those last season I tried requeening with no success towards curing the disease, and then late in the season I united one of them with a queenright wild swarm, and they are apparently all right this year; the other died in midwinter with plenty of sealed honey still in the hive.

The brood and young bees are in nowise affected; it being all mature bees that are affected. KANSAS.

ANSWER.—Looks a good deal like paralysis. If it is, the affected bees have a trembling motion, perhaps shiny in appearance, and the other bees seem to be pulling and dragging to get them out of the hive. As far north as you are the disease is not likely to amount to much, disappearing of itself. I am sorry to say I know of no sure cure for it, although many cures have been offered.

Cyprians—Re-Stocking

1. I have one colony of pure Cyprian bees Would you advise stocking up with them?
2. Are black and Italian bees crossed as good producers of honey as pure Italians or goldens?
3. Last spring I lost one colony of bees; they had plenty of honey, were sheltered from north winds, and did not have foul-brood nor black brood. Can you tell what was the cause?
4. Would an untested queen and a quart of bees make a strong colony in a good season?
5. Why are the Cyprians great for swarming?
6. What kind of a bee would you advise to stock up with? IOWA.

ANSWERS.—1. Cyprians have the reputation of being the crossest bees ever brought into this country. If your bees live up to that specification it will be advisable to change the blood.

2. The first cross may be as good as the pure stock, and in some cases better; but after the first cross there is deterioration, and the bees become poor.

3. I don't know. Might be a bad queen, or any one of a number of things.

4. Yes, if started as early as June.

5. I don't know; I didn't know they were specially noted as great swarmers, although they are noted as building a large number of queen-cells.

6. Probably Italians would be as good as any.

Rearing Queens.

I am trying to rear queens for my own use, but have had bad luck. Can you you tell me why I fail. I take a strong colony and have them queenless for four days, then I give them grafted cells to work on. When the cells have been sealed one or two days I transfer them to a wire cage and hang them in a big frame to hatch. The trouble is they don't all hatch at once and they die in a day or two. I always have candy in one corner of the cage. What is my trouble? SUBSCRIBER.

ANSWER.—You say you transfer cell to cage when the cell has been sealed one or two days. It is not well to cage a cell so soon. Leave it in care of the bees just as long as possible. The object of caging is so that there will be no chance for the first virgin that hatches to tear open the other cells. So there is no need to cage a cell until within a day or so of hatching. Then they will be more vigorous and likely to live. If I understand correctly, the young queens die in the cage when only a day or two old, I am not certain why that is, if they are vigorous, unless it be that they are caged in a part of the hive where they are not kept warm enough. They should be in the warmest part of the hive, in the center of the brood-nest, or in the upper story over a strong colony.

If you see to this, and if the cells from start to finish have been in the care of a strong force of bees, I know of no reason why the young queens should not generally live in their cages for a week or more, although it is always well to have each virgin given to her own nucleus or colony just as soon as convenient.

Young Queens Ten-Frame Hive—Increase

1. Today (June 13) I transferred a colony of bees from a box-hive to a standard movable frame hive. For two weeks previous to this I could hear queens calling to each other and so expected a swarm, but after watching for two weeks and no swarm, I transferred them. I found eight or ten queen-cells, but all but two had hatched. What became of the queens?

2. Why did they not swarm? I saw no eggs in the combs when I was transferring them.

3. Why were there no eggs?

4. What are your reasons for giving preference to 10-frame hives?

5. What is the simplest and most profitable method of increase?

6. What do you consider the safest and most certain way of introducing queens?

KANSAS

ANSWERS.—1. As you heard queens piping and quahking it must be that the old queen was gone and virgins were present. As the bees did not swarm the virgins fought to a finish as fast as they emerged, and only one would be left.

2. Probably the weather was so adverse, or so little honey coming in, that they were discouraged from swarming. [Perhaps they swarmed and you did not see them.—ED.]

3. The old queen was in some way gone, and the young queen had not yet begun to lay.

The chief reason is that the larger hive gives chance for a stronger colony, with ordinary attention, and allows more stores to guard against starvation in winter.

5. For one with very little knowledge of bees perhaps nothing is better than natural swarming. One who has informed himself by careful study of his bee-book can tell better than I can which method of artificial increase is better for him.

6. The most safe and certain way I know of is as follows: Find three, four or more combs well filled with brood and put them in an upper story over an excluder on the hive of a strong colony. About eight days later, when all the brood is sealed, put a piece of wire-cloth over a strong colony and place on this an empty hive-body. Put in this hive-body your frames of sealed brood, but be very careful to brush every bee from these frames Put in the queen and cover up tight. There will be no bee but the queen in this story, but at once young bees will be emerging from their cells, the heat will arise from the colony through the wire-cloth, and in short time the queen will have quite a number of attendants that have never known any other queen, and of course will be friendly. Five days later set the story on a new stand, and allow a small entrance. In a short time you will likely see these 5-day-old bees bringing in pollen, although under ordinary circumstances bees do not carry pollen until two weeks old or older.

Putting on Supers—Late Swarms—Inspector

1. Is it harmful to place two supers on a hive at the beginning of the honey crop? If one is only put on when should the rest be put on?

2 Can one put the supers on too early? Would there be any harm done if they were put on say about May 1?

3. Does it pay to produce honey in extracting frames instead of sections for one's own use?

4. I have read that late natural swarms should be returned to the parent hive 24 hours after hiving them, How is this done?

5. What is the best material to use in a smoker?

6 If one has two sources of honey crop coming at different times, should the supers with the first honey crop be taken off and others put on for the second crop?

ANSWERS.—1. The only harm that can come from it is that it takes extra heat to keep the extra super warm. The usual way is to put one on, and when that is about half filled, or at least well started, to put a second one under the first.

2. Yes, it does at least a little harm to give supers much before they are needed, for keeping warm the extra room retards building up. But it is still worse to be too late. A good rule in your locality is to give the first super as soon as you see the very first clover bloom.

3. That depends. If you are willing to pay considerable for something to make a nice show on the table when company comes, or for the little extra flavor in comb honey, then have sections For every day use in the home, take extracted because you get more of it.

4. Put the swarm in a dark cellar for 24 hours, then dump it down in front of the old hive just as you would in hiving an ordinary swarm.

5. It is chiefly a matter of convenience. I don't think I have ever found anything better than hard wood cut into pieces about half an inch square; but I haven't used it for years because other things are more convenient. Just now I am using oak bark because it happens to be easily gotten. Next year it may be cotton rags, oily cotton waste or something else. Anything that gives a good smoke doesn't go out easily, and lasts well.

6. Yes, if the two kinds of honey are of different values, as when buckwheat follow clover

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A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.
White Mfg. Co.,
4Atf Paris, Tex.

ONE ROOT Hatch wax press, never used. Also 44 gauge shot gun good as new. $5.00 for press and $4.00 for gun. Both bargains.
W. S. Pangburn, Center Junction, Iowa.

MISCELLANEOUS

25 LADIES' COOTS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

WANTED—To hear from everybody who would like to earn money making comb-foundation.
J. J Angus, Grand Haven, Mich.

FOR SALE—One Harley-Davidson motorcycle, 1916, electric equipped, 3-speed, speedometer; fine condition, run less than 3,000 miles; power washing machine and a wringer; one 2-horse gasoline engine; feed grinder. Will sell or trade for bees, equipment or honey.
G. M. Withrow, Mechanicsburg, Ill.

WANTED

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Illl.

WANTED—An experienced bee-man for 1918. A splendid proposition for the right man. One of the best locations in the South.
J. L. Leath, Corinth, Miss.

WANTED—One second-hand Barnes power saw outfit in good condition.
Geo. A. Hummer & Sons, Prairie Point, Miss.

ENLIST

In the growing army of honey-producers who are preparing to do their bit for Uncle Sam and the Allies, by endeavoring to secure a bigger crop of honey than ever before.

Prospects are bright for a bumper yield. Are you ready for it? Don't wait for prices to soar again, but place your orders now.

THE A. I. ROOT COMPANY
Medina, Ohio

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The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal

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Well illustrated and up-to-date. Subscription price postpaid.
Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year
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The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

Our Bees Swarm Very Little—

—But when they do throw a nine-pound swarm, as shown in the cut, they will fill a hive body and a stack of supers in short order.

You will find it a profitable investment to re-queen with our vigorous, gentle, leather-colored ITALIAN QUEENS. $1 each; $9 per dozen.

Send for booklet.

JAY SMITH
1159 DeWolfe Street
VINCENNES, INDIANA

Crop Reports and Market Conditions

For our August issue we asked the following questions of reporters:

1. How large is the honey crop compared to last year?
2. What are the prospects for the rest of the season compared to last year?
3. Is honey in good demand? Is it being sold as fast as harvested? What prices are being obtained, wholesale and retail?
4. Has the tin can shortage affected the honey situation? Will it stimulate local sales by beekeepers?

THE HONEY CROP

As intimated before on this page, the honey flow was extremely late this year, owing to the backward season, so that instead of harvesting in the middle of July, many northern beekeepers are just at the beginning of the flow.

In New England and the East, generally, crop prospects are about the equal, if not a little better than last year. In the central west, however, the situation is from poor to serious. Some few localities report from 50 to 100% of last year, but most report either a total failure or only a very small proportion of last year's crop. In our own locality colonies which already had near 150 pounds of honey harvested, at this time last year, have nothing in the supers and nothing in sight.

Michigan and Wisconsin report backward weather and generally a short crop. Minnesota seems to have fared a little better. Iowa, Illinois, Indiana, Missouri, Kansas, Nebraska and other Central States are way below normal. Beekeepers in these states will need to import honey to supply the home demand, if they can get it.

Georgia and Florida have had a crop much better than a year ago. Practically all honey harvested has been sold and delivered on a basis of about 10 cents for extracted. Alabama and Mississippi are still waiting on sweet clover, with a very short crop in prospect.

Texas estimates run all the way from less than nothing to 40% of last year's crop. The northern and western parts of this state seem to have fared better than the southern, where many bees are starving.

In Colorado, Idaho and Montana the crop is now on. It promises to be good, probably in excess of 1916, as the flow was a failure in Idaho, especially in 1916.

California and the Coast are hardly up to the last season, though many reports claim as low as 50% of last year's crop. In restricted areas there have recently been large losses from forest fires and excessive heat.

PROSPECTS

Recent rains in some parts of Texas have increased the chances for later crops there. In the southeast the later crop may be normal. Rains in the central region will almost assure a fair crop wherever heartsease and Spanish needle are available. On the whole, later crop prospects will hardly come up to those of last season.

HONEY DEMAND AND SALES

Probably not since the civil war has there been such an enormous demand for honey. As fast as honey is being offered it is being "gobbled up" either by the big jobber or by the small consumer. Sales are very easily made now on a basis of 10 cents for extracted and not a few have been reported as high as 12½ cents. This is in a wholesale way. One beekeeper has contracted a carload of alfalfa extracted at 11¼ cents f. o. b. Denver.

More honey than ever before has been contracted ahead, leaving probably a minor proportion to be sold after harvest. This holds true, especially, of the big producing areas of the west. One large bottling firm, we understand, is circulating broadcast offers of 8½ cents for this season's extracting. Most offers, however, range from 9½ to 12 cents, depending on the quality of the honey.

The beekeeper who sells his honey at home or by mail is getting more inquiries than he will likely be able to fill. One of these has set a price for consumers of $1.25 for a 5-pound can; $2.00 for a 10-pound can, and $18.00 for two sixty-pound cans. He reports as many sales as last year. Will his prices not be too low, if he expects to supply his trade throughout the winter?

THE TIN CAN SHORTAGE

Generally speaking, the tin can shortage has not prevented the sale of the honey crop, as many of the larger producers were supplied before the shortage became evident. In the west cases of two sixty-pound cans are selling at $1.15 to $1.35. Friction top pails are still to be had and at prices not above the proportion of rise in other commodities. Glass jars for a while were unobtainable, but the situation is now much easier.

Some big producers who usually sold some locally will not do so on account of the favorable prices in quantities, but on the whole the local sales are very large proportionately and should continue so.

SUMMARY

The crop this year can hardly equal last year, while the demand is much greater than it was at the same date in 1916. We do not see how prices can drop any below the present level. Nor do we understand how an advance can be avoided. Beekeepers for years have insisted on the food value of honey. Are the prices yet anywhere near the level they should be to correspond with other foods?

No movements of comb honey are as yet reported. However, the price on this also is bound to be advanced by the high price of extracted. Old stocks are cleaned up. New stocks should realize from 50c to $1.00 a case more than a year ago.

HONEY AND BEESWAX

Kansas City, Mo., July 17, 1917.—Your letter to hand and in reply will say that the market on comb honey here is around $3.65 per 24 section case for strictly No. 1. Very little extracted honey on the market.

Hardly know what the trade will pay for same, but find a few offerings from the west at from 11 to 12 cents a pound f. o. b. Kansas City. Beeswax, strictly No. 1, is 40 cents per pound. C. C. Clemons Bee Supply Co.

New York, July 16, 1917.—There is nothing doing at all in comb honey to speak of. Stocks are well exhausted and what little there is left on the market is dragging; prices range from 10c to 14c per pound, according to quality.

The market on extracted honey is very much unsettled, and prices are fluctuating. California new crop is quoted at from 9¾ to 11c for light amber, 12 to 14c for white, and we are informed that sales of fancy white have been made at as high as 15c per pound f. o. b. Coast. Receipts of West Indian honey are normal and uncertain at this time of the year, but find ready sale at from $1.10 to $1.20 per gallon, and exceptionally fine lots at even higher figure It is too early to say, at this date, what the crop in the East and Middle West wi'l be, but as bees were in good condition in the spring, a good average crop should be produced. Hildreth & Segelken.

San Antonio, July 14, 1917.—Only a few offerings of honey are being made and these in limited quantities. No considerable movement will be felt until the cotton surplus is harvested, about September 1. Prices are a little weaker, ranging about 9c for amber to 12c for white. Bulk comb, very scarce at 12c to 15c. Beeswax, 30c cash and 32c exchange.

Southwestern Bee Co.

Chicago, July 16, 1917.—At this writing none of the new crop of honey has appeared on the market with the exception of a few cases of extracted from Minnesota that is little better than sweet water. What it was gathered from we do not know. At this writing it has not been sold, it having been rejected for the reason given.

What little white extracted honey that has come on the market during the past month has sold at about 14c per pound, without any amber from which to quote.

Advices now coming would indicate that before the month closes there will be honey from nearby sections and the same should meet with a ready sale, for the market is entirely free from offerings of the preceding crops, or that gathered in 1915 and 1916.

Beeswax is ranging from 35c to 40c per lb., according to color and cleanliness.

R. A. Burnett & Co.

Denver, July 21 .1917.—We herewith send you market report for the August number of your journal:

A few cases new crop comb honey coming in now, which sell in a local way at $4.50 for No. 1 white and $4.00 for No. 2 white. Crop promises to be light. White extracted sells wholesale at 16c, no light amber or amber available yet.

We pay 36 cents in cash and 38 cents in trade for clean yellow beeswax, delivered here.

The Colorado Honey Producers' Assn.

FRICTION TOP CANS *and* PAILS

¶ We can now furnish Friction Top Cans and Pails at the following prices, f. o. b. Chicago; Keokuk, Iowa; or Hamilton, Illinois ---

2-lb- Cans in crates of 612, per crate	$26.75
2½-lb. Cans in crates of 450, per crate	22.50
2½-lb. Cans in cases of 12, per case	1.40
5-lb. Pails in crates of 200, per crate	16.00
5-lb. Pails in crates of 100, per crate	8.25
5-lb. Pails in cases of 12, per case	1.20
10-lb. Pails in crates of 100, per crate	12.50
10-lb. Pails in cases of 6, per case	.95

¶ The above prices are low, considering the present prices of tin plate. Send in your orders at once.

DADANT & SONS, Hamilton, Ill.

Your Perplexing Question

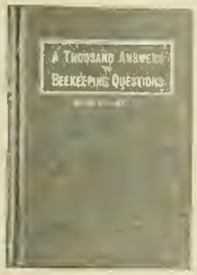
What was it this year? Did your bees swarm too much? Has your honey soured? Are your drones black, and why? Are you troubled with foulbrood? Wouldn't the bees work in the supers? Do you want to raise queens for your own use?

A SINGLE ANSWER

May save you many pounds of honey, many wrong steps. It would be worth dollars to you. Yet here you have a thousand of these questions answered in that latest of bee books

"A Thousand Answers to Beekeeping Questions"

By DR. C. C. MILLER



Experience is a Good Teacher—That's why this book should be at your hand. Dr. Miller has had sixty years of experience with bees. His problems were similar to yours and he has overcome them.

A World's Record—Dr. Miller holds the world's record for comb honey production in an apiary of seventy colonies or more. In 1913 his average from 72 colonies was 266 sections per colony. His best colony gave him 402 finished sections.

The "Thousand Answers" book contains 280 pages. It is cloth bound and printed on good paper. Its thousand answers were culled from over 10,000 as answered in the American Bee Journal by Dr. Miller in the last 22 years.

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20 Years of Select Breeding Gives Us Queens of Highest Quality

Queens for Honey Production—Queens of Unusual Vitality

"There are few queens their equal and none better"

What Bees Do Headed By Our Queens

"One swarm made 185 sections of honey and another 206 sections. I am well pleased."—Melvin Wysong, Kimmell, Ind.

"Your bees averaged 150 pounds of surplus honey each. I find them not only hustlers but gentle."—Fred H. May, Meredosia, Ill.

"I have tried queens from several different places and like yours best of all."—C. O. Board, Alabama, N. Y.

"We are only one mile from Lake Erie and exposed to high cold winds; in fact, this is the windiest place along the great lakes. Your bees were able to stand the winter with only an insignificant loss, and we would have no others. As for honey they averaged 175 pounds of extracted surplus, did not swarm, and gave an artificial increase of 30 percent, which is as fine a record as can be had in this locality, especially when the work is done entirely by amateurs." Name furnished on request. North East, Pa.

Price List of Golden and 3-Banded Italian Queens

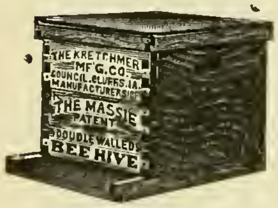
Untested.................................. 50c each $45 per 100
Select untested..............................65c " 50 per 100
Tested...$1.00 each, $ 90 per 100
Select tested.. 1 25 " 110 per 100

We guarantee safe arrival of all Queens—that they are very resistant to European Foulbrood, and, in fact, will give complete satisfaction. Wings clipped free of charge. Our capacity is 1500 Queens monthly

M. C. BERRY & COMPANY, Hayneville, Alabama, U.S.A.

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate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THE MASSIE PATENT
DOUBLE WALLED BEE HIVE

THE MASSIE HIVE

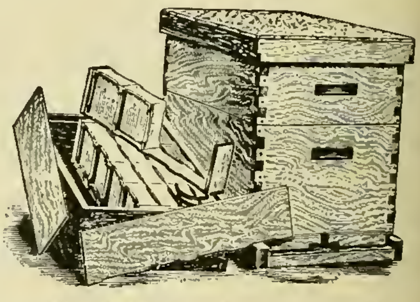
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



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We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

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Quality Service System

BUY MARCHANT'S QUEENS AND GET RESULTS—RE-QUEEN NOW

We have in operation over 1000 nuclei. We are prepared to take care of your orders, both LARGE AND SMALL. Our queen business for the past two months has been larger than ever before. Why? Because our stock gives results. We are offering queens at the following prices for JUNE, JULY, AUGUST AND SEPTEMBER:

	1	6	12	25	50	100
Untested	$1.00	$ 5.00	$ 9.00	$16 00	$30 00	$52.00
Tested	1 50	8.00	15.00	Breeding queens,		$ 5.00
Select tested	2.00	10.00	18.00	Sel. breeding queens,		10 00

Never before has this strain of bees been put on the market at such a low price. Take advantage and requeen your yard with the best strain on the market.

J. E. MARCHANT BEE & HONEY CO.

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(*The home of the southern honeybee.*)

QUEENS of MOORE'S STRAIN of ITALIANS

PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Untested queens, $1 00; 6, $5.00; 12, $9 00
Select untested, $1.25; 6, $6.00; 12, $11 00

Safe arrival and satisfaction guaranteed. Circular free.

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Queen-breeder Rt. 1, Morgan Ky.

Southern Beekeepers

Get the famous Root goods here; veils, 65c; smoker, 90c; gloves, 65c; wire imbedder, 35c; honey knife, 80c; 1-lb. spool wire, 35c; medium brood foundation, 1 to 11 lbs., 58c per lb.; 11 to 25 lbs., 56c; 50 or 100 lb. lots, 53c; 10-fr. wood zinc excluders, 50c each. Hoffman frames, 3 75 per 100. Honey extractors for sale. I am paying 28c cash and 29c in trade for wax.

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BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

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Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

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ECONOMY TO YOURSELF
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Are two essential points gained by using

Dittmer Process Comb Foundation

Because it is the same TASTE, and the same SMELL, and the same FIRMNESS, as the COMB the Honey-bees make themselves. It is the more acceptable to them because it is not like their OWN COMB. Remember, Mr. Beekeeper, that to you HONEY IS MONEY—then use

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Work for a full-capacity honey crop

Send for Samples—All Supplies at Prices you Appreciate

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PORTER BEE ESCAPE SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
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Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
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If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

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Send for our catalogue.

AUGUST LOTZ COMPANY
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ESTABLISHED 1885

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400 POUND QUEEN

No our breeding queen dosen't weigh 400 lbs. her colony produced 400 lbs honey the past two seasons. Unt. queens 75c. each; six $4.25; twelve $8.00. You make dollars where I make cents. in introducing this stock We stand square behind every one of these queens and guarantee them to give satisfaction. 3-band Italians only.

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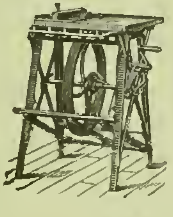

Read what J. I. Parent of Charlton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

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". . . . . .a large dealer in the south recently told me that many beekeepers are asking for cypress hives and saying that they do not want anything else. This is so often the case that nearly all the supply dealers are now listing cypress as well as. . . . . . .

I recently bought several hundred dollars worth of hives for my personal use from a firm which has never offered anything in cypress. I insisted on cypress bottoms and they had to be made especially to fill my order. I feel very sure that the use of cypress for bee hives, hive bottoms and hive stands will very largely increase as beekeepers learn more of the non-rot qualities of the all-heart wood of this species, which should be specified in all cases.

Trusting that the above facts may be the means of saving you many future replacements, I am

Very truly yours,"
(Signed)

NOTE:—We omit the name of the competing wood rather than injure it.

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There are 42 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't. Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for Building; Vol. 36 is the Carpentry Book making easy a dozen hard jobs of carpentry; Vol. 19 is the Canoe and Boat Book; Vol 37 is the Silo Book; Vol. 3 is the GREENHOUSE book. All are free for the asking. Suppose you ask for one or a dozen, right away.

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HONEY

We are in the market for good grades of white and light amber extracted honey. Drop us a line stating how much you have and how packed. Also your prices f. o. b. your station.

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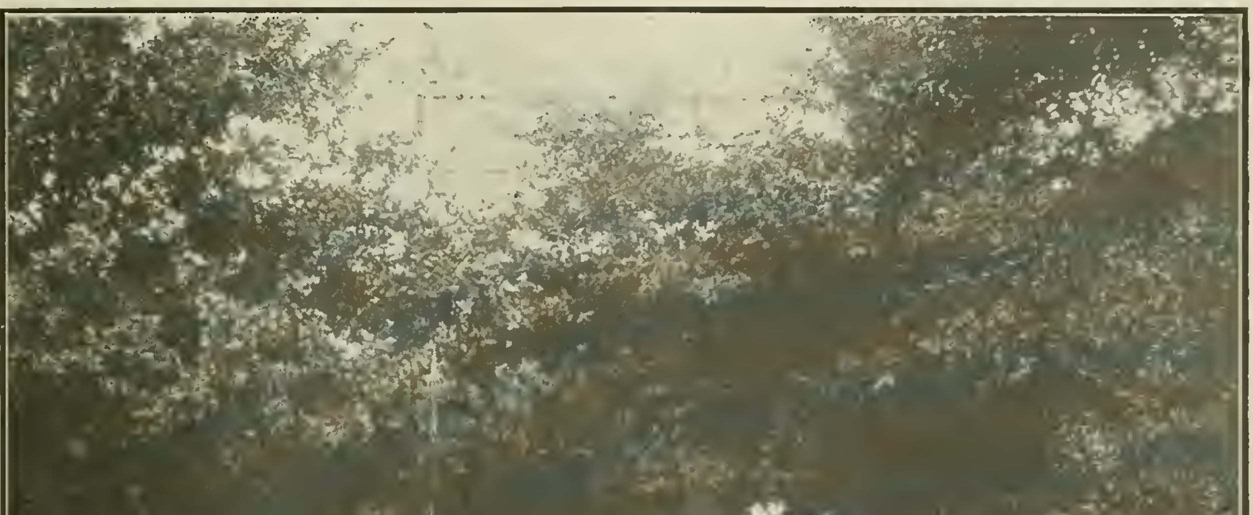

Apiary of the Agricultural School, Kutais in the Caucasus. Kutais is the Ancient "Colchis."—See Editorial.

"When we receive your Honey Return mail brings your Money"

The Fred W. Muth Co.

GET SERVICE LIKE THIS MAN

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FRIEND MUTH:—Your letter with check for $146.20 for wax has been received. Thanks I do believe you beat them all when it comes to quick returns for goods shipped you I may have some more wax to sell after we get our cappings melted.

Yours truly, [SIGNED] ELMER HUTCHINSON.

We Want Immediately! Extracted Honey

We buy all grades of Extracted Honey. Large or small lots. Send sample and price. If price is right, we will buy. Partie who have Fancy and Number One Comb Honey write us at once. We will buy from 40 to 50 carloads this season.

BEESWAX

Send us your Beeswax. We pay highest market prices, and send you our check the same day shipment is received.

OLD COMBS

Make some spare money from the wax rendered from your old comb We will render it, charging only 5 cents per pound for rendering, and pay you best market prices for the wax rendered.

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We are prepared to ship you the same day order is received any number of shipping cases. Several carloads are here now ready for buyers. Send your order in now before our supply is exhausted. We sell Lewis Beeware.

REMEMBER We remit the same day your shipment arrives. Read the letter above and be convinced that this is the house to send your shipments to. Try us

THE FRED W. MUTH CO.

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Our September SPECIAL PRICE on untested leather-colored and Golden Queens---a bargain never offered to the American beekeeper before---

Price on 1 to 10 Queens, 60 cts. each
" 11 to 25 Queens, 55 cts. each
" 26 to 100 Queens, 50 cts. each
" 100 to 1000 Queens, 48 cts. each

Safe delivery. If not satisfied, return Queens and get your money back. The Root Company, The American Bee Journal, Dadant & Sons, any mercantile agency, and others will tell you who we are.

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"First Lessons in Beekeeping," written by the editor of this magazine, is intended primarily for the use of beginners in beekeeping. You should have it. Price, postpaid, $1, or clubbed with the American Bee Journal, one year for $1.75.

American Bee Journal, Hamilton, Ill.

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American Bee Journal, Hamilton, Ill.

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If you are thinking of buying bees this spring, we would be pleased to hear from you. We furnish full and nucleus colonies, bees by the pound, and queens.

A strong colony of Italian bees with a tested Italian queen, in a new 8-frame dovetail hive, complete with super, for $11.00 Tested Italian queens, $1.50. Untested, $1.10.

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Home Apiary: Glen Cove, L. I.

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Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

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WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

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Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50 Select Tested, $2.00. The best all-purpose bee.

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Atlantic, Iowa

Our Fighting Men Need Smokes!

25c Sends a big package of tobacco **$1** Keeps a Soldier happy for a month

Help us to send little packages of happiness to our "Sammies" in the trenches and our "Jackies" with the fleet. They are risking their lives for our sakes. Do what you can to make them comfortable—they crave and need tobacco. Every cent contributed goes for tobacco.

"Our Boys in France Tobacco Fund"

25 West 44th St. New York **Endorsed by War and Navy Depts.**

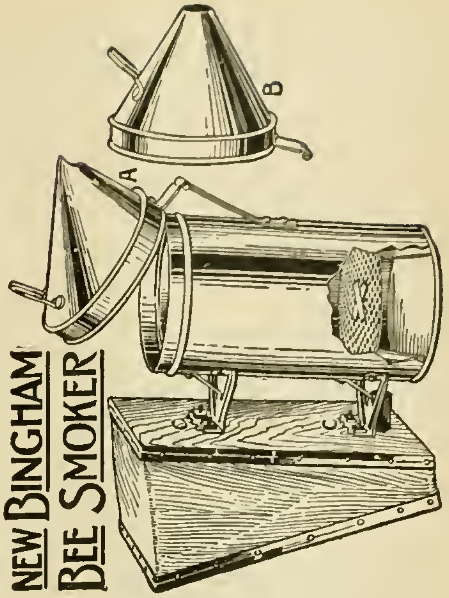
NEW BINGHAM BEE SMOKER

In 1878 the original direct draft bee smoker was invented and patented by Mr. T. F. Bingham, of Michigan. Mr. Bingham manufactured the Bingham Smoker and Bingham Honey Knife for nearly thirty-five years, and in 1912 becoming a very old man, we purchased this business and joined it to our established business of beekeepers' supplies and general beeware. Those who knew Mr. Bingham will join us in saying that he was one of the finest of men, and it gives us much pleasure to help perpetuate his name in the beekeeping industry.

Bingham Smokers have been improved from time to time, are now the finest on the market, and for nearly forty years have been the standard in this and many foreign countries. For sale by all dealers in bee supplies or direct from the manufacturers.

Smoke Engine, 4 inch stove....28 oz. $1 25
Doctor, 3½-inch stove...........26 oz. 85
Two larger sizes in copper extra
Conqueror, 3-inch stove.........23 oz. .75
Little Wonder, 2½-inch stove..16 oz. .50

Hinged cover on the two larger sizes, postage extra.

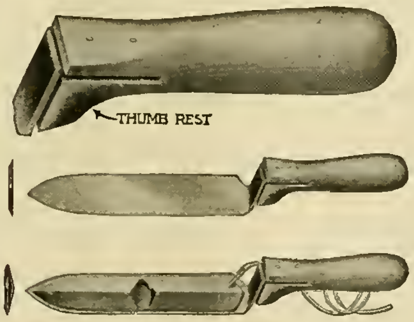


A. G. WOODMAN CO., Grand Rapids, Michigan

Bingham Honey Uncapping Knives

With New Cold Handle

We are furnishing the same quality steel, best money can buy, thin-bladed knives that Mr. Bingham manufactured years ago. The old timers all remember these knives and many are writing in as Mr. Volstad in the following letters. The substitutes offered by others have not given the satisfaction desired.



Lyle, Minn., June 21, 1917.

A. G. Woodman Co.

Gentlemen: Have you the thin, good working uncapping knives we used to get about 20 years ago and that worked to perfection?

K. H. Volstad.

We sent an 8½ and 10-inch knife and received the following letter:

Lyle, Minn July 5, 1917.

A. G. Woodman Co.

Gentlemen: Knives received; glad you sent them at once. They are just what I want and have been looking for, but did not know where to get them.

K. H. Volstad.

Many of the most extensive honey producers insist on the Genuine Bingham Knives. Mr. N. E. France, of Platteville, Wis., gave us a fine unsolicited testimonial on the steam heated Bingham knife, too long for this space. Present prices are: 10-inch knives, 85 cents each; 8½-inch knives, 75 cents each. Steam heated knives, with tubing, $2.50 each. Postage extra.

A. G. WOODMAN CO., Grand Rapids, Mich.

Tin Honey Packages

YOU WILL MAKE A MISTAKE if you do not ask for our **Low Prices on** Friction Top Pails and Cans. We are **Saving money** for car load buyers and others of smaller lots. Why not you?

Our three-year contract is enabling us to make prices considerably under general market quotations. Let us hear from you, specifying your wants.

A. G. WOODMAN CO.
GRAND RAPIDS, MICH.

Dr. Miller's Thousand Answers

Postpaid $1.25

THE GUARANTEE THAT MADE "Falcon" Bee Supplies Possible

The "Falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "Falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "Falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "Falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

NOTICE

HONEY WANTED HONEY

Do not forget when your crop of honey is ready for sale to send us a sample, state your lowest price, and also how it is put up. We are in the market for unlimited quantities, and will pay cash on arrival. Let us hear from you before selling your crop.

C. H. W. Weber & Company

2146 Central Ave., Cincinnati, Ohio

Tennessee-Bred Queens

45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested.........	$1.50	$ 7.50	$13 50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	9.00	$ .75	$ 4.00	$ .75
Select Untested..	2.00	8.50	15.00	1.50	7.50	13.50	1 25	6.50	12.00	1.00	5.00	9 00
Tested............	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested....	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1.50; 2 fr., $2.15; 3 fr., $2.75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year

Select queen tested for breeding, $5.00

The very best queen tested for breeding, $10.00

JOHN M. DAVIS, SPRING HILL, TENN.

3-BAND ITALIAN QUEENS

Produce Workers

That fill the super quick with honey nice and thick. They have won a world wide reputation for honey gathering, hardiness and gentleness. Untested, 40c; 6, $2.25; 12, $4 00. Tested, 75c; 6, $4.00; 12 $7 50 We guararantee safe arrival and satisfaction.

S. D. CHEATHAM & CO.

Rt. 4, Greenville, Ala.

The apiaries for queens of dependable quality

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower..........................	.50
American Poultry Advocate.............	.50
American Bee Journal.....................	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill.

GOLDEN ITALIAN QUEENS

Read a few reports of big yields from single colonies of this gentle strain of Goldens: H. E. Bartz, Keytesville, Mo., 264 pounds of extracted honey; J. M. Buchanan, Franklin, Tenn., 250 pounds of extracted honey; L. C. McCarty, Nampa, Idaho, 250 pounds of comb honey; Fred Dury, Unionville, Mo., 374 pounds of comb and extracted honey.

I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—*Prices of Queens*—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested - - -	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested - - -	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested - - - - -	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested - - - - -	3 00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Select queen tested for breeding, $5.00. - The very best queen tested for breeding, $10.00

BEN G. DAVIS, Spring Hill, Tennessee

FOREHAND'S QUEENS

15 LBS. SURPLUS ☜ ***Which Colony Is Yours, Mr. Beekeeper?*** ☞ **150 LBS. SURPLUS**

GET A GOOD QUEEN

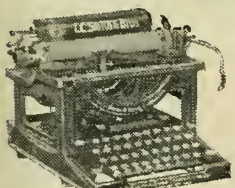
One that will keep the hive chock-full of bees at all times, make the biggest yields of honey, stingless, and look the prettiest at a medium price. Over 25 years of select breeding has brought our queens up to a standard surpassed by none and superior of many. We have tried the principal races and every method known, and we have now selected the best of both. THE DOOLITTLE METHOD and the THREE-BAND BEES. Use the 3-Bands Why? Because they get results. The foremost bee-men of the world use them. Our queens are sold by many of the largest dealers in the United States.

Louis H. Scholl (one of the largest beekeepers of the Southwest) says; "Three-band Italians have proven the best all-round purpose bee after trying out nearly every race, not only in an experimental way while still at A. M. College, but in our own apiaries as well."—(*In Beekeepers' Item.*)

	1	6	12		1	6	12
Untested............$	50	$ 3 00	$ 6.00	Tested..............	$1.50	$ 8 75	$17.00
Select untested......	.75	4 25	8.00				

Write for prices on large quantities

W. J. FOREHAND & SONS, Ft. Deposit, Ala.



$2.50 A MONTH BUYS A VISIBLE WRITING **L. C. Smith**

Perfect machines only of standard size with keyboard of standard universal arrangement — has Backspacer — Tabulator — two-color ribbon — Ball Bearing construction — every operating convenience. **Five days' free trial.** Fully guaranteed. Catalog and special price **free.**

H. A. SMITH, 851-231 No. Fifth Ave., Chicago, Ill.

QUEENS OF QUALITY

Capacity of my yards over 1000 Queens a month

After 20 years of careful selection and breeding, I now have a strain of bees that cannot be excelled by any. My queens are all bred from IMPORTED STOCK, the very best in the world for honey gathering and gentleness. They are not given to swarming. What more do you want in bees than the three above qualities?

GUARANTEE

You take no risk in buying my queens, for I guarantee every queen to reach you in first-class condition, to be purely mated and to give perfect satisfaction. All queens that do not give satisfaction I will replace. Send for circular.

	1	6	12
Untested....................................	50c each.		
Select untested............................	.75	4 25	8.00
Tested...	1.25	7.00	13.00
Select tested................................	2.00	11.00	20.00

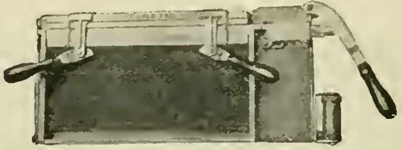
If queens are wanted in large quantities, write for prices.

L. L. FOREHAND, Ft. Deposit, Alabama

TEXAS QUEENS

Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

GRANT ANDERSON
Rio Hondo, Texas



PAT. APPLIED FOR

C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Does the work in half the time. Has been tried and is guaranteed to do accurate work. Makes the frames ready in one handling. Price $6.50.

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

A SOLDIER BOY SINGS

**"I want tobacco just as much as bandages and socks,
So drop your contributions in my old tobacco box!"**

Send 25 cents and we will forward a "comfort package" of tobacco to some soldier or sailor at the front—enough to keep him in tobacco for a week. Or **send $1**—it keeps a fighting man happy for a month. Tobacco is the only thing that cheers the soldier boy through the dreary hours in the trenches. He'll probably send you a post card in ackowledgment—a war souvenir you will treasure. Send your "Smokes" at once—he needs them badly. Every cent contributed goes for tobacco to our soldiers and sailors abroad.

"Our Boys in France Tobacco Fund" **25 W 44th St.**
NEW YORK CITY
Endorsed by War and Navy Departments

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917 list free.**

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

"Signed Lumber is Safe Lumber."

It's a pretty good idea (now that the lumber mills in the Southern Cypress Manufacturers' Association are IDENTIFYING EVERY CYPRESS BOARD THEY SAW) to MENTION TO YOUR LUMBER DEALER, CONTRACTOR or CARPENTER—and to ASK YOUR ARCHITECT to SPECIFY—that YOUR CYPRESS MUST BE

"TIDEWATER" CYPRESS IDENTIFIED BY THIS TRADE-MARK
Stamped in the End of Every Piece or APPLIED TO EVERY BUNDLE

S C M A
No. of Mill
TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS."

Let our All-ROUND HELPS DEPARTMENT help YOU *MORE*
Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association
1251 Hibernia Bank Bldg., New Orleans, La., or 1251 Heard Nat'l Bank Bldg., Jacksonville, Fla.

INSIST ON TRADE MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, LET US KNOW

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

HONEY WANTED

Have you any light amber or white EXTRACTED HONEY? Send us a sample of what you have and state how packed. We will name you our best spot cash price.

BEE HIVES and SUPPLIES

For beekeepers who buy wisely, we have just received ten car loads of "LEWIS BEWARE," everything bright and new. Quality unexcelled

Send us a list of your needs. We will gladly quote you prices that will save you money.

Save Your Combs and Cappings

and send them to us. Our high-pressure outfits and special equipment will get out all the available wax. The extra wax we get usually more than pays for rendering charges.

For your share of wax we will either pay you the highest cash price or work it for you into DADANT'S FOUNDATION.

If your bees are not already acquainted with DADANT'S FOUNDATION, you should give them a chance to test it. Their action will be more convincing than our words, "Best by Test."

DADANT & SONS,
HAMILTON, ILLINOIS.

AMERICAN BEE JOURNAL

Vol. LVII.—No. 9 **HAMILTON, ILL., SEPTEMBER, 1917** **MONTHLY, 1.00 A YEAR**

BEEKEEPING IN THE SOUTH

Notes on Southern Conditions Gathered for Our Readers by Our Staff Correspondent on a Trip Through Seven Southern States

IT is difficult for the northern beekeeper to appreciate the difference in conditions between north and south. There is a great interest in the south on the part of many of our readers and in order to give them as much information as possible concerning the opportunities and difficulties of honey production in the Southeastern States several weeks were spent in visiting beekeepers of Kentucky, Tennessee, Alabama, Georgia, Arkansas, Mississippi and to a very slight extent in Florida. Florida is so different from the other States mentioned that it can only be studied effectively by spending some time there and considering it entirely by itself. Because of its favorable climate Florida has great attractions for the northern man, but from a beekeeping standpoint, as far as could be determined, one must use great care in selecting a location in order to insure a success at honey production within its borders.

This seems to be true of the south generally, as there are large areas where the honey flora is scant and where but few colonies can be kept profitably in one yard. On the other hand, there are some locations where the crops harvested are phenomenal, and as dependable as the average good location in the north.

It will be readily apparent that it was impossible to cover such a vast territory within a few weeks' time in anything but a superficial manner. This article, then, must be expected to be rather general in its scope and to give at best but a bird's eye view of the situation.

Kentucky and Tennessee are more like the north than the south in their general conditions, and will not be mentioned except casually in this article. While the winters are milder than farther north, there is a serious winter problem in both these States, and it is quite similar to our problem. In the main, their honey-flows are similar and their methods of operation are much like ours.

The first locality to be considered is North Georgia. John W. Cash, of Bogart, is an extensive honey producer who gave me every opportunity to see his section of the country and it is to him that I owe most of the information about that section. It is quite probable that other parts of North Georgia would be quite different from his locality, but it will serve to give an idea of general conditions there.

I regard Mr. Cash as a remarkable beekeeper. One who attains the measure of success which Mr. Cash has reached under such conditions as those under which he works, is entitled to much credit. In the first place, the flora is so scant that only 25 to 30 colonies can be kept in one yard. In the north few men would undertake commercial beekeeping in such a locality. Mr. Cash now has more than thirty yards, with over eight hundred colonies. This requires a large amount of travel, but the automobile simplifies this problem greatly. When ...we learn that his

HOME OF JOHN W. CASH AT BOGART, GA. HIS APIARIES ARE SMALL, BUT HE HAS A STRING OF THEM.

lowest average has been 56 pounds of surplus per colony and his highest average 86 pounds, it becomes apparent that his locality is far more certain than the average one of the north.

The certainty of results seems largely due to the great variety of resources from which his honey comes. His principal crop comes from the wild blackberries, which are abundant in the woods. The blackberry flow is at its best about the middle of April, and the average yield is about 25 pounds per colony. The honey is amber, very thick, and does not granulate. Following the blackberry comes a light flow from poplar, sumac and gum. Sourwood comes in July, but there is little sourwood in his locality. In good sourwood localities the yield from this source is often very good. Cotton comes about two weeks after sourwood.

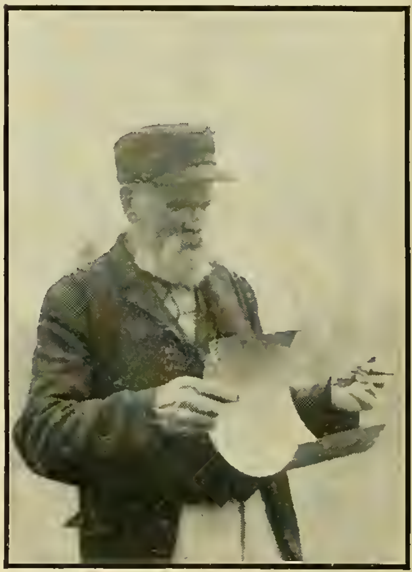
I found much interest in the varying accounts of cotton as a honey plant in the various sections of the south. Some beekeepers declared that it yielded well, while others doubted whether cotton ever did produce honey. One beekeeper, who had experience in different parts of Georgia, was able to give me considerable information. On some soils it yields well, while under other conditions it produces no nectar. Cotton honey is of indifferent quality and granulates badly. The honey is very thin and sometimes it ferments in the hive.

In the Cash neighborhood cowpeas bloom with cotton and both together add something to his yield. In the fall, asters seldom fail to give a return of about 12 pounds per colony. There are several other plants which yield small quantities of honey, such as holly and locust. He is a little too far north for titi and mistletoe, although a few plants are to be found.

Such a flow requires careful operation if the different kinds of honey are to be kept separate. Mr. Cash uses shallow extracting supers and extracts after each flow. He winters his bees with a shallow super filled with honey under each brood nest. By spring this honey will have been consumed in brood rearing and the super is placed over the cluster, where it is shortly filled with new honey. Brood rearing continues nearly all winter, and more honey is consumed in wintering than in the north. The first pollen comes from tag-alder, in January, so that the bees have ample time to build up before the blackberry flow in April.

A beekeeper going to any of the southern states would have much to learn, since conditions are so different. Eight-frame hives seem to suit conditions there much better than they do in the north where seasons are short and our flows rapid. The great difficulty there is to prevent the bees from consuming all their surplus in brood rearing during the periods between flows. The weather is so mild that moths can work all winter, and it is easier to care for surplus combs by leaving them on the hives than otherwise.

JOHN W. CASH, AN ENERGETIC GEORGIA BEEKEEPER.


T. W. LIVINGSTON WAS A CONTRIBUTOR TO THE AMERICAN BEE JOURNAL MANY YEARS AGO.

ONE OF JOHN W. CASH'S APIARIES IN THE PINE WOODS OF GEORGIA.

A full depth eight-frame body, together with one-half depth body are often used for brood rearing during the principal season.

I was disappointed in failing to find Mr. Wilder at his home in Cordele. Mr. Wilder is well known to our readers and has written much about his local conditions for the Journal. Such notes as I was able to secure at Cordele are from others. Conditions are very different in central and south Georgia from those of north Georgia. From forty to seventy-five colonies are kept in a yard in the Cordele locality. Mr. Wilder has twenty yards in this vicinity, beside those at the Okefenoke swamp, and also different localities in Florida. Mr. Wilder is now taking it a little easier and working his bees on shares, giving his time to general supervision and to marketing his crops. His total crop was reported to be thirteen carloads of honey last year. Around Cordele his honey is gathered principally from poplar, tupelo, titi, gallberry and cotton.

At Leslie, Georgia, I greatly enjoyed a visit with Mr. T. W. Livingstone, formerly of Iowa. Mr. Livingstone has never been able to secure as good crops of honey there as he did in Iowa, but he is very loyal to Georgia, for he feels that the mild climate has greatly prolonged his life. Mr. Livingstone makes his own foundation by the dipping process. He may be seen in the picture with the instrument with which he dips it. This makes a sheet of just the right width and length for a Langstroth frame. For the first time, I found a beekeeper with nothing but Banat bees. He reports them to be very gentle, to breed up early in spring, swarm early and to breed all season. Mr. Livingstone says that all bees propolize much worse in the south than in the north, since propolis is very plentiful. The Banats are much like the Caucasians in appearance. They raise large queencells in clusters. Banat queens are slightly smaller than Italians. Mr. Livingstone keeps from seventy to one hundred colonies in a yard.

From Mr. A. B. Marchant I learned much of interest about the Appalachicola river section in Florida. Mr. Marchant was engaged in honey production on that river for many years. The tupelo flow some years is wonderful. The great difficulty with that region, as well as much of southern Alabama, is the lack of summer pollen. After June 1 there is no pollen, and the bees rapidly run down until it becomes necessary to move the bees to other pastures for a pollen supply. Thousands of colonies of bees have starved to death in midsummer in localities that produce wonderful honey-flows at some seasons of the year. The principal lack seems to be pollen after the close of the spring flow.

Titi and gallberry are reported as valuable sources of honey in localities where there are sufficient plants at other seasons to supply plenty of pollen and sufficient honey to keep the bees in condition. There are, of course, many such localities, and the stranger should take plenty of time to investigate conditions all year around before risking too much on a beekeeping venture in the south. In the next article the sweet clover belt of Alabama and Mississippi will be considered. This seems to be the most dependable region and good crops are the rule.

T. W. LIVINGSTON'S OUTYARD AT LESLIE, GA.

Smoke

By A. F. Bonney.

HAVING a perfect fuel for the smoker does not always insure constant and perfect combustion, nor is it always easy to get a fire started, for the least obstruction of the air passage will cause it to go out. Having had many experiences which had a tendency to cause explosive language, the idea of a little sliding door at the bottom of the fire chamber developed, but a trial of it did not encourage me to continue with it.

Finally our old friend, Salt Petre, was called in, in this way: Two ounces of the salt was dissolved in a pint of water, and some corrugated pasteboard wet with it and dried in the sun; next, pieces 5x8 inches in size were rolled into cylinders and tied with a string. This composes Dr. Bonney's Perfect Smoker Fuel Lighter, and is used in this way:

Wrap greasy waste around the cylinder so that it takes a little force to put it into the smoker. Next pack more waste in, until the fire chamber is solid full; then light the paper at the **top** end, and you will have a steady, constant, cool smoke which will not go out. I have used twenty of them, experimentally, so far. Any fuel may be used, but the greasy waste is so common and inexpensive that there is no need that we look further.

Buck Grove, Iowa.

Bee-Metamorphosis

Here's a good one from Dundee, Scotland: (C. C. M.)

In either sex the ovum needs
  Three days before the chorion breaks.
Five days the female-larva feeds;
  An extra day the male-grub takes.

A week in prison lies the queen;
  For thirteen days a worker hides;
A drone develops all unseen
  A fortnight and a day besides.

The total time is just about
  A fortnight and a day for mother;
Three weeks will bring a worker out,
  And three days longer hatch her brother. —Cyprian Stock.

More Food Values.—According to W. B. Barney, of the Iowa Food Department, a pound of honey, extracted, has the same food value as the following articles, figured at regular retail prices: Milk, 21c; cheese, 25c; apples, 35c; jelly, 30c; steak, 40c; oranges, 60c; eggs, 85c; butter, 21c, corn flakes, 30c, puffed wheat, 40c.

A SOUTHERN BEE YARD IN WINTER. SUPERS ARE LEFT ON THE HIVES TO PREVENT DESTRUCTION OF COMBS BY MOTHS.

AMERICAN BEE JOURNAL
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA

PUBLISHED MONTHLY AT
First Nat'l Bank Bldg., Hamilton, Ill.

Entered as second-class matter at the Hamilton, Illinois, Postoffice.

C. P. Dadant, Editor.
Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

IMPORTANT NOTICE

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THE WRAPPER LABEL DATE indicates the end of the month to which subscription is paid. For instance, "dec17" on your label shows that it is paid to the end of December, 1917.

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THE EDITOR'S VIEWPOINT

Our Front Cover

The picture on our front cover represents a modern apiary in the province of Kutais, on the south slope of the Caucasus mountains. It is one of the photos kindly sent to us by the Caucasian Beekeepers' Association.

It may interest our readers to learn that the province of Kutais is the Colchis of ancient history. Those who are acquainted with the stories of mythology will remember Jason and the Argonauts invading Colchis for the conquest of the Golden Fleece, so famed among the poets, and their return with the magician beauty, Medea.

According to the legends, Colchis was not only a very rich country from which the ancients secured wheat, wine, cattle, horses, flax and honey, but it was also the center of an immense commerce. The rich cloths of India and of Persia, the silks of China, the iron and pelts of Siberia, came through the Caspian sea (Hyrcanian sea) up the Cyrus (Kour) river, into Colchis and were from there shipped to the European countries through the Black sea (Pontus Euxinus). So these rich lands have a history that goes far back of the Christian era. Since the Russian revolution, they are coming to the front again.

The dark skin of the inhabitants of a part of Kutais is said, according to Herodotus, to be due to the immigration into that country, under Sesostris, of a body of troops, from lower Asia.

The latitude of Kutais is about that of Northern Illinois.

Bibliography—Recognition Among Insects—By Dr. N. E. McIndoo

This is publication No. 2443 of the Smithsonian Collections. It is written by Dr. McIndoo, whom our readers will remember by his remarkable studies of the "scent organs" of the honeybees. (American Bee Journal, June and July, 1916.) In this paper Dr. McIndoo gives an account of his experiments proving the existence of special odors among insects and specifically among the bees. His experiments establish that "each hive of bees has its own particular odor, and when a colony is divided each portion forms a hive odor different from that of the other portion and also different from the hive odor of any other hive and probably different from that of the original hive, and the new hive odor is formed gradually and is sufficiently different at the end of the third day from that of any other hive to cause total hostility."

He holds, from his experiments, what practical apiarists have long claimed, "that the odors emitted by the honeybee are the chief means of recognition."

This is therefore a confirmation of the views held by non-scientific beekeepers based upon daily practice in the apiary. If the question is asked: How can bees change the odor of the hive? we will reply: How could it be otherwise? As soon as a swarm is cast or a colony divided, there is a change of conditions. The one hive will have more honey, or more new combs, or more old combs, or more pollen, or perhaps it will have more field workers bringing fresh odors, or they may work upon a slightly different harvest. Again, the hive or the box itself may be of different structure, made of slightly different lumber. We remember having had a colony which emitted a very peculiar smell when opening it and we wondered what caused this odor, until we noticed that a very dark pine knot produced it. A few more drones in one colony, an older queen, a larger quantity of pollen or pollen from different blossoms, and numerous other circumstances, added to the combination of the bees' own odor are sure to produce a different hive odor, which is sometimes so perceptible that it is noted even by the apiarist. Yet our perception of odors is very much more blunt than that of the bees. Everyone who has been a producer of honey knows how quickly they notice all odors which resemble those of the hive.

We have long ago been convinced that the presence of the queen in the hive is constantly evidenced by the queen-odor, which must be very plain to them, for usually they recognize

HIVES MADE OF TREE TRUNKS AND BARK; GOURI, KUTAIS, RUSSIA.

her absence, if she is removed, within a very short time.

As a corollary to the study of odor among bees, Dr. McIndoo describes the numerous odors produced by other insects in hundreds of different ways. This shows that the bee is not an exception in the matter of odors, whether personal, sexual, or family odors.

As to the odor-producing glands, he shows that they vary in different insects. In the honeybee he suggests that it may be produced in a pouch located between the fifth and sixth abdominal terga, or dorsal plates of the abdomen. This organ was described by several writers and notably by a scientific Russian apiarist, Zoubareff, in the November (1883) number of the Bulletin D'Apiculture, then published by our regretted Swiss friend, Bertrand. But Mr. Zoubareff, who quoted Nassonoff, a member of the Imperial Society of Acclimatation of Moscow, suggested an entirely different function for these glands. He thought they might have some relation with the well-known ability of the bees to throw off a portion of the excess water from the nectar which they gather.

There is evidently still a great deal to learn on the anatomy of the bee. But such studies as are here mentioned lead us towards the light. Although we may occasionally take a step in the wrong direction, sooner or later we are called back into the true path of nature study.

Reducing the Cost of Marketing

In its last issue the new magazine, "System on the Farm," had a very interesting article on the above subject by A. L. Brown, a very successful farmer of Washington, who explains his plans in detail.

Three points emphasized by Mr. Brown may well be brought to the attention of the beekeeping public; the elimination of all waste, a careful record of costs, and direct to consumer marketing, aided by judicious and novel advertising.

How many millions of pounds of beeswax have gone to waste through the carelessness of otherwise good beekeepers who did not take the pains to save their scraps of wax, or to guard against the occasional ravages of the moth. How many pounds of honey have been left ungathered through the bees being in poor shape for the long anticipated crop?

In the matter of costs it is doubtful if one beekeeper in a hundred knows the actual cost of his honey, knows how cheap he can sell it and still make a fair profit. Many, without doubt, sell their honey below the cost of production fail to allow for interest on investment, depreciation, or labor.

And after the crop has been harvested, a large number of beekeepers throw their honey on the large markets to be sold at once, oftentimes helping to pull down the price when they might, with small effort, have sold their whole crop locally at enough more to pay all costs of local advertising.

Contest Announcement

In visiting the beekeepers in various localities we are impressed with the great variety of useful devices and short cuts which we find. Nearly every beekeeper has something which he has worked out to suit his particular notion which would be useful to others if only brought to public attention.

The American Bee Journal is always on the watch for new things to present to the honey producers and in order to induce our readers to tell us what they have we will make a special offer as follows: For a description of the most useful device we offer a prize of ten dollars. For the second best, five dollars. For all others which we print we will give the choice of either a year's subscription to the American Bee Journal, First Lessons in Beekeeping, or Miller's Thousand Answers to Beekeeping Questions. In describing a device or short cut be sure to send a drawing or photograph whenever possible. The contest will be open until December 15. We hope that every reader of this journal will try to think of something which he has found useful to enter in this contest.

Honey Prices

Read the crop and market page in the back part of this magazine if you want to get ideas on honey prices.

A. L. BROWN'S PRODUCTS ARE ALL SOLD DIRECTLY TO THE CONSUMER. ADVERTISING IN A JUDICIOUS MANNER HELPS TO MAKE THE SALES.

GOLDENRODS AS HONEY PLANTS

Facts About a Widely Distributed Family of Plants as a Source of Nectar--By Frank C. Pellett

Of the eighty species of goldenrod (Solidago) all but three or four belong to North America. It is one of our most widely distributed native plants. Some species seem adapted to nearly every condition from Canada to Mexico and from the Atlantic coast to California. There is a wide difference, however, in the value of the different species to the beekeeper and it is no easy task to get reliable information regarding the range of conditions under which it secretes nectar abundantly, nor is there much recorded information concerning the particular species which are most valuable for this purpose. It is a well-known fact that the secretion of nectar with any plant is greatly influenced by soil and climatic conditions. Some of our most valuable honey plants have been reported as producing no nectar when introduced into Australia.

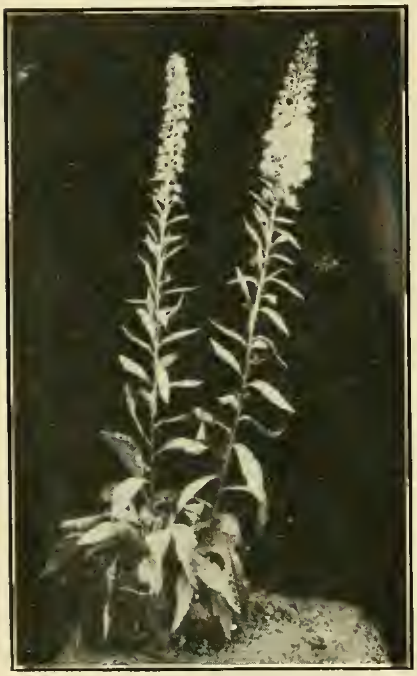


FIG. 1.—SOLIDAGO PUBERULA.
(Photograph by Sladen.)

It is very probable that when we have studied the matter carefully we will find that the same species of goldenrod varies as much in its nectar secretion under different conditions as we know to be the case with alfalfa.

I am greatly indebted to Mr. John H. Lovell for notes on the behavior of goldenrods in New England and for several of the photographs which accompany this article. Mr. F. W. L. Sladen, the Dominion apiarist, has kindly furnished similar information about these plants in Canada and also photographs of the species which are most valuable there. Without the assistance of these two, this article would have been impossible. It is unfortunate that similar information is not available from all sections of the country.

Lovell is of the opinion that all species of goldenrods secrete nectar in some localities. This is quite probable, although there is very little honey from goldenrod in Iowa from any species. Along the upper Mississippi, in the northeastern counties, a few beekeepers report goldenrod. In other sections of the state beekeepers report that they have never seen a bee on the plant. Dr. L. H. Pammel, botanist at the State Experiment Station, reports nine species of goldenrods common to this state. He lists S. serotina, S. canadensis, and S. graminifolia, as furnishing some honey here. If Lovell is right about all species yielding nectar under some conditions, then all are of interest to the beekeeper, and only the question remains of learning the conditions under which each species develops most favorably. If all do not yield nectar it is important that we learn to distinguish between the species which are valuable honey plants and those which are troublesome weeds.

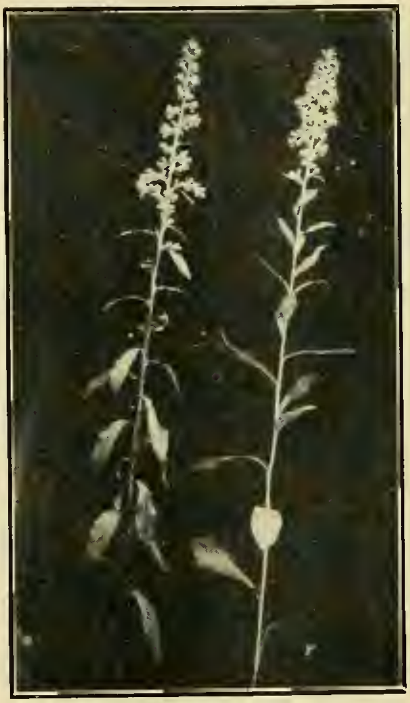


FIG. 2.—SOLIDAGO SQUARROSA.
(Photograph by Sladen.)

Richter lists only two species of this plant as important in California. The western goldenrod, S. occidentalis, he mentions as common in wet places such as marshes and river banks, from August to October, yielding an amber honey. S. californica, the common goldenrod of the coast, he describes as common on dry plains and hillsides or mountains throughout the state, from August to December. He lists it as a fair honey plant.

Scholl reports goldenrods as common to all parts of Texas and states that the honey yield is good in favorable seasons when it is not too dry. He reports a long season, from April to November, but gives no list of the species furnishing nectar in that region.

Sladen reports finding eleven species of goldenrods about Ottawa. He finds that individually the canadensis group produce comparatively little nectar, but their great abundance makes them important collectively.

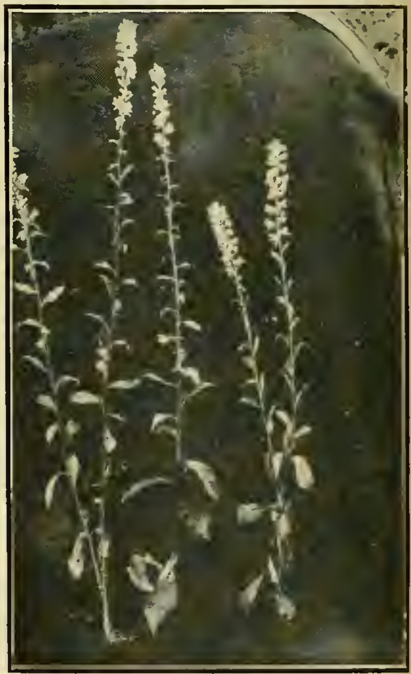


FIG. 3.—SOLIDAGO HISPIDA.
(Photograph by Sladen.)

Sladen also notes the variation of the plant under different conditions and says that the nature of the land determines the presence and abundance of the best species. He reports that in the wet lands of Charlotte County, N. B., especially in the Honeydale district, they, together with asters, furnish the principal source of nectar and that they are valuable generally as a source of surplus in coastal districts of New Brunswick and Nova Scotia. The same is said of eastern Manitoba. He places the yield at from 50 to 80 pounds per colony in localities where the best species of goldenrod and asters abound. The honey is usually of good quality, ranging in color in the different districts from white to dark amber; that gathered in swampy districts usually being bright golden. Evidently goldenrod honey is seldom stored separate from aster in localities from which these reports are made.

Mr. Sladen describes three types of locations in which the plants may be found in Canada:

1. Open swamp or bog, where S. uliginosa and S. rugosa are found. The former begins blooming in August, while the latter blooms until mid-September, so that there is more than a month of flow from these plants. Although the bogs are independent of rain during the honey-flow, fine weather and moderate warmth are necessary to a crop.

2. Sandy or gravelly barrens or plains. On the coast as well as inland on such lands are found S. puberula (Fig. 1), while inland are to be found, in addition, S. squarrosa (Fig. 2) and the less important S. hispida (Fig. 3). Good rains in early August, followed by fine and warm weather bring best results.

3. A restricted area centering in Cumberland County, Nova Scotia, in which S. graminifolia (Fig. 5), is a troublesome weed.

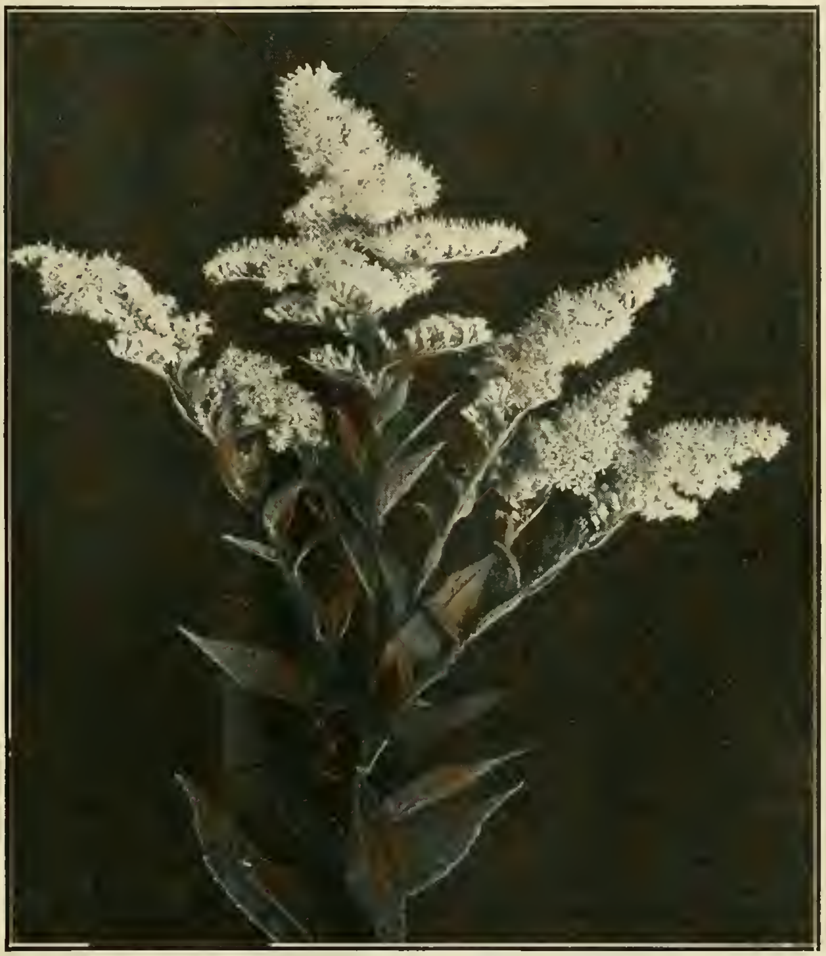


FIG. 4.—TALL, HAIRY GOLDENROD (SOLIDAGO RUGOSA), BEST FOR HONEY.
(Photograph by Lovell.)

He further reports that the roadside goldenrods of old Ontario are not heavy producers of honey under ordinary conditions.

In an article on the "Honey Flora of New England" which appeared in the April, 1916, American Bee Journal, Lovell states as follows:

"If I were compelled to stake the existence of bee culture in New England on a single genus of plants I should select the goldenrods. There are many species, and they all yield nectar and pollen. They begin to bloom in midsummer and continue to bloom in October. They are very common and there are species adapted to the seashore, the fields, the rocks and the woods. I have never known the flow of nectar to fail, and a great quantity of heavy yellow honey is stored annually."

Mr. Lovell has kindly sent me his field notes. There is a large amount of interesting information which space will not permit publishing. The notes include the study of six species, all of which produce some nectar in Maine. He describes the tall, hairy goldenrod (S. rugosa, Fig. 4), as the latest to blossom and the most valuable as a honey plant. It is found in damp thickets and on moist land. While in bloom the bees work it very diligently and the honey is stored rapidly. The apiary is filled with a sour odor which, in the evening, is noticeable at a distance.

Goldenrod honey, according to him, is deep golden yellow in color, thick and heavy, with a more decided flavor than white clover honey. When extracted it granulates in a month or two, but the bees winter on it perfectly.

The Bushy Goldenrod

Next in importance he places the bushy goldenrod (S. graminifolia, Fig. 5). This is common in fields, open woodlands and hedgerows. The odor is faint, but the nectar is clearly visible in the flowers. He reports as many as six honeybees at work at one time on a single flower cluster. It will be noted that this is one of the species which Doctor Pammel mentions as yielding nectar in Iowa. Sladen also cites it as important in Canada.

Graenicher collected 135 different species of insects on this species in Wisconsin.

The cream colored goldenrod, sometimes called white goldenrod, (S. bicolor, Fig. 6), is of special interest because of the fact that it is the only one of the group which is not yellow in color. Although it produces nectar, I find no record which indicates that it is of much importance as a honey plant anywhere. Lovell says that it is of little value in Maine.

The early goldenrod (S. juncea, Fig. 7), is the first to bloom in Maine and is very abundant in old fields. The bees visit it freely, but apparently do not get much honey from it.

Graenicher states that he has collected 182 different species of insects on this plant in Wisconsin, which indicates the presence of considerable nectar in that locality.

General Reports

In searching through the beekeeping literature for reports on honey from goldenrods I seldom find the particular species mentioned. There are numerous reports of honey from goldenrod, but this is as far as the report usually goes.

"Two colonies of bees taken to a sandy plain forty miles north of Ottawa, August 25, each gathered in three weeks about forty pounds of surplus honey from S. puberula and S. squarrosa. It is estimated that at least three-fourth of the honey came from S. puberula, which was much more abundant than S. squarrosa. The honey is of a light color and the flavor and aroma are pleasant and distinctly suggestive of goldenrod." (Sladen in 36th report, Ontario B. K. A.)

"You ought to see the bees work on it. They store lots of honey from it. Last year I had five or six nuclei which did not have any stores at all on the first of September, but when I went to feed them for winter, I found they had twenty pounds of nice honey gathered from goldenrod.

They all came through the winter in good condition." (Kentucky. Gleanings in Bee Culture.)

"The goldenrod is one of our main sources for a fall flow. The bees usually fill one or more supers from it." (Connecticut. Gleanings in Bee Culture.)

"My bees have gathered lots of goldenrod honey this fall and at times the odor has been offensive to the neighbors." (Vermont. Gleanings in Bee Culture.)

"Smartweed and goldenrod grow here, but do not furnish any honey. Never saw a bee on them." (Iowa. American Bee Journal.)

How I Dispose of the Crop

By W. S. Pangburn.

WHEN I commenced to produce honey for the market, something like twelve or thirteen years ago, I wanted to sell my honey in a lump to the jobber, and be done with it. I had, and still have, a farm in connection with the bees, or vice versa (I really do not know which myself), and thought it would be the best way for me to dispose of the crop.

I soon learned, however, that if I were to receive what my honey was worth, I had to look to someone other than the jobber to buy it. I also reasoned that if I ever expected to advertise my business and the quality of my honey, and get my name before the public as a producer of honey, I must sell to people who used honey, not those who bought honey and sold it under a different label from my own. You may sell to a jobber all your life, and the public will never know you are a producer of honey, and this I consider goes a long ways in disposing of the crop to good advantage.

A business that is not worth advertising, isn't much of a business. There was one instance that cured me of the jobbing trade, and was the means of my starting the direct-to-the consumer trade. Five years ago this winter I took a little trip into Chicago to visit a friend who at that time was selling about a ton and a half of my honey each year.

One afternoon we went down to the loop district, where the best stores are located, and took in The Boston, The Fair, Siegel Cooper, and Rothschilds department stores, where my friend had tried to dispose of my comb honey a short time before. The price they offered him for fancy white comb honey was 11 and 12 cents, delivered in Chicago.

We went direct to the honey departments and found comb honey selling in the different stores at from 24 to 28 cents per section.

The extracted honey in 6-pound jars was bringing 20 cents per pound. The thing that stirred me most was that this extracted honey was put up by a jobber and bottler who had tried to buy my extracted honey for 8 cents delivered.

I said "No more for me; I have had plenty," and I went after the direct-to-the-consumer trade. I might add that I have never been able to land a sale of extracted honey to a real jobber in my life.

During the first half of my beekeeping experience I did not try to do much with my local market. There were at that time quite a few small beekeepers scattered through the neighborhood who nearly always produced some honey for the market. This honey was sold at about as many different prices as there were beekeepers, and some clover comb honey was sold at 8 cents per pound.

This, as every good beekeeper knows, is the hardest kind of competition. I would rather compete with a producer who was putting out a good article and asking a reasonable price, than with the average farmer beekeeper who knows nothing of the price he should receive for his honey, much less of how it should go on the market. This kind of competition, however, is getting easier to handle, especially with the merchants, as they are commencing to realize that a first quality honey put up in an attractive manner is, as one merchant told me last fall, half sold as soon as it gets on the counter.

There is no question but what display advertising pays, and should be followed more than it is. I never have seen a display that did not attract attention if it was gotten up in an attractive style.

The average merchant does little in this line. More's the pity. Just before the holidays I saw a beautiful window in a nearby town with almost everything in the eatable line you could think of, even to vinegar and glucose syrup, but no honey, and this same merchant had all kinds of honey for sale. I never could understand this, but it is nearly always the case.

I have come to the conclusion if honey is ever advertised and put on a level with other foods as it should be, it is up to the beekeepers to do it, and if we wait until we have a large sum to start with, it will be some time before honey will receive the prominence it should.

National advertising will never advertise your honey locally, nor work up a personal trade. Don't wait, get busy.

Do not think that because you live in a small town it will not pay you to advertise by putting in a display. It will not only sell honey in your own town, but people passing will look through curiosity, and often times buy. A person came a distance of 35 miles in an auto to my apiary and purchased honey for four different families, stating he saw the display at the grocer's in town.

The merchant tells me he sells lots of honey to people from other towns, who see the honey and buy it. I have done away with the tin containers so far as the store trade is concerned. I have proven that twice the honey can be sold in glass as in tin. I use the 15-ounce jars, 1-quart milk

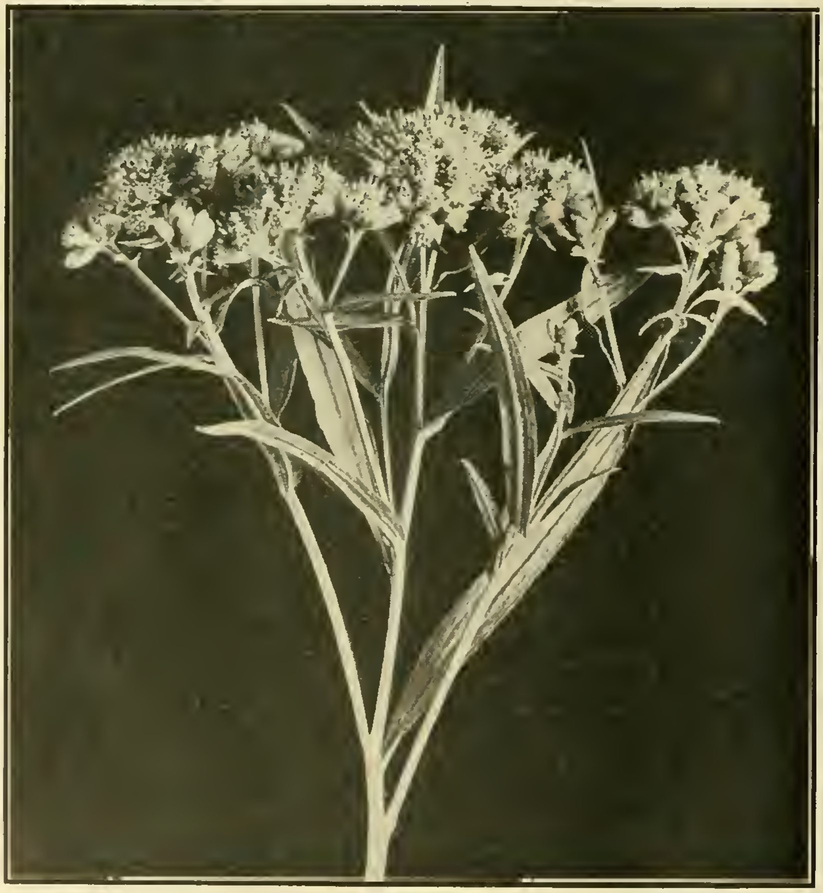


FIG. 5.—BUSHY GOLDENROD (SOLIDAGO GRAMINIFOLIA), A FINE HONEY PLANT.
(Photograph by Lovell.)

bottles, 6 and 12-pound jugs, but will discontinue the 12-pound size, as they have proven too large for this trade. I give them a rebate on the glass containers returned in good order, which with some is appreciated, and helps in selling more honey.

Put out an attractive package. People will not appreciate your efforts in putting your honey in cheap containers in order to make it cheaper to them. I have tried it, and know. Of course these fancy cartons, labels and glass containers all add to the high cost of living, but the dear people want them, and I believe in selling them what they want. A fellow this winter asked me what I wanted for a 60-pound can f honey. I told him $6. How much if I furnish cans? I told him 10 cents per pound. All right, he said, I will bring the cans. He was satisfied and so was I. Cans are high.

We should try and educate people to know that honey is a food, not a luxury nor a medicine, and one of the cheapest foods on the market today. "No sweeter words of tongue or pen" than a delicious food with a light pull on the pocketbook. I bought some of the cards advertised in the American Bee Journal and it was a surprise to many people to know that honey was so high in food value. I expect to use more of them, and to get some small cards printed giving the food value of honey, and send them out with every letter, and the leaflets that the American Bee Journal sends out, with every order for honey.

Always keep honey at your grocer's, and some at the apiary. Never be out of honey. This idea of thinking that we can sell honey only in the winter time is all bosh. Honey may be sold the whole year through, not as much in summer as in winter, of course, but every pound of honey consumed in the summer is off the market when the rush season comes. Let us sell all the honey we can, direct to the consumer, and in our local markets, and keep it out of the big markets where there is nearly always an over-supply, and consequently low prices. It will go a long way towards equalizing matters, and the markets, and beekeepers in general, will profit by so doing.

The peddling business is an old topic, but should be followed more than it is, and I often wish I might find time to follow it. I have peddled honey but little, so cannot say much on that subject. The first half day I sold 400 pounds, and the second something like 300 pounds. This taught me how easy it is to sell people honey when brought to their doors, when these same people who meet you once or twice a week never thought of asking anything about honey. Not exactly a staple article as yet, you see.

The bulk of my honey goes to the mail order trade. Out of the 24,000 pounds produced in the past two years, all has gone to this trade and the home trade, with the exception of about 4,000 pounds that went to other beekeepers who either had no crop or were sold out. This part of the selling business is hard to describe, as a great many things have to be reckoned with, and some of them will have to be learned by experience. But first we must get in touch with people who buy honey; there is but one way I know to get them, and that is by the use of printer's ink. Care must be exercised in its use, however, or you will part with some good money and get little in return.

One should go slowly at first and feel his way. Do not advertise where much honey is produced, because there are beekeepers in that community who are probably looking after the business. You must also consider freight rates; if you don't your prospective customer will. There are exceptions to this rule, but they are not to be relied upon. I shipped to Massachusetts and Vermont, where the freight on a 60-pound can was $1.16, and, strange to say, I had a repeat order.

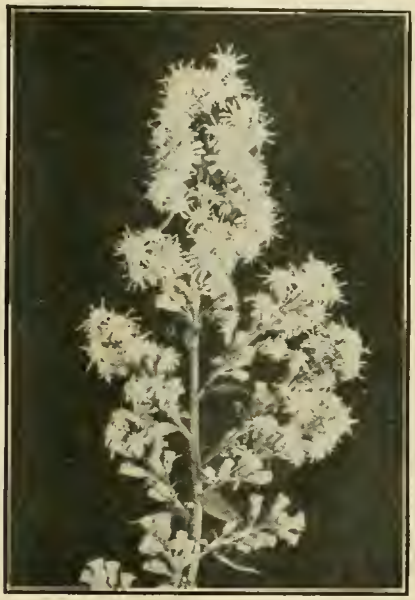


FIG. 6.—CREAM COLORED GOLDENROD. (SOLIDAGO BICOLOR.) (Photograph by Lovell.)

Pardon me for making the assertion, but it requires some tact to successfully conduct a mail order trade. Much depends on the individual. There are some amusing things connected with it, as well as some not so amusing. One must be somewhat of a judge of human nature, and in most cases all you will have to judge from will be a letter of inquiry. It is up to you to land the order with a well written letter, and perhaps a sample of honey to convince the prospective customer. Give every customer a square deal and have the same price to all.

Sell quality honey. In fact, it is the only honey that will hold your customers. It is the "tie that binds." Put it up in neat packages, in such a way that it will reach the customer in good order. If there is anything that will disgust a customer it is a dauby mess of honey, and if he happens to be a new one it will likely be the last order you will get from him.

Give references, then demand cash with order, and stick to it. You will save money and much worry. Remember you are dealing, in most cases, with strangers of whom you know nothing. Honor your father and mother, but not strangers' promises.

When you once find a good locality in which to sell honey, stick to it. Do not jump from one place to another unless you are not getting results, and remember you can't work up a mail order trade in a day.

Center Junction, Iowa.

Amateur Wax Rendering

By G. C. Greiner.

IN the last January number of the Schweizerische Bienen Zeitung two Schweizer brothers give their method of draining, washing, rendering into wax, etc., of cappings from extracting combs, which is in many points identical with my way of wax-making. The main points on which we may differ is the difference in the tools we use. One brother in particular is describing a method which is primitive in the extreme. He says he makes two "rosts" (wooden grates or frames) and uses an openly woven bag, which he fills with the drained cappings to be rendered. He places one of the "rosts" on the bottom of the vessel, onto this the bag of cappings and onto this again the second rost. The whole he weights down with stones or pieces of iron, fills the vessel to within one or two inches of the top with water and boils it about one-half hour, and when cooled takes off a nice yellow cake of wax. This, of course, is only one-half of the job. After the cake of wax is taken off he has to fish out the weights, then the rost, then the bag that has to be emptied and cleaned, and at last the

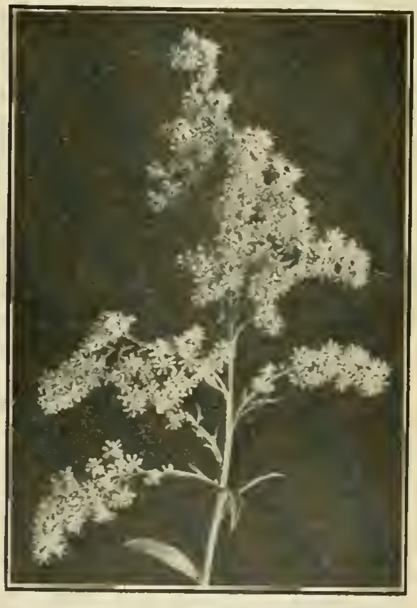


FIG. 7.—EARLY GOLDENROD (SOLIDAGO JUNCEA.) (Photograph by Lovell.)

second rost—all mussy work. A properly made tool, which I will describe later on, would prevent all this trouble; it is a pleasure to manipulate it.

The same principle these two men make use of I apply to my wax-rendering, and for the small beekeeper who has only a small amount of wax to make, not more than perhaps fifty or seventy-five pounds, this will accommodate him, providing he has convenient tools to work with. There is nothing mussy or disagreeable about wax rendering when we are prepared for it. I do not even spend any extra time when doing it. At the same time when I am labeling and filling cans, preparing sections for market or doing any other bench work, I generally keep my wax machine on a little three-burner oil stove on the end of the bench in operation, when I have wax to make.

Rendering wax is like any other work, it must be done in proper time. This, of course, has reference to the small one-horse beekeeper who has not the up-to-date outfit for the manufacture of wax in a wholesale way nor the means for the upkeep of such an outfit. By taking time by the forelock, beginning to work up our cappings as soon as we begin extracting, many little advantages may be gained. When the uncapping can is filled up it has to be emptied to make room for the next day's extracting; the cappings have to be drained and washed for rendering into wax, and there is no better, easier time for this than to begin right away after each day's extracting. With the uncapping knife cappings are then easily chopped up and loosened up to allow the yet warm and pliable honey to drain during the night. Next morning the cappings can be moved into a dishpan large enough to hold the previous day's cappings and soaked with sufficient warm water to detach the honey that may be left from the night's draining. After a thorough stirring up with a large, long-handled skimmer, the most convenient tool for all handling of cappings, and a few hours' standing the whole contents of the pan can be turned into the uncapping can again and left to drain until the can is needed for extracting.

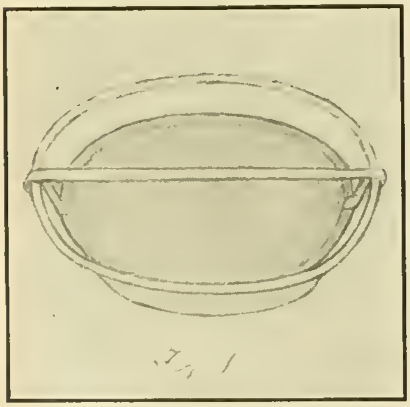


Fig. 1. The Wax Cleanser of G. C. Greiner.

The cappings are then ready for the first boiling, for which a deep kettle with bail is the most convenient. For all boiling and melting of wax I use white enamel or granite dishes. Tin or iron is liable to discolor it. While cappings should never be boiled to excess, a moderate heat with frequent stirring for about 30 minutes, and plenty of water, will give good results. After the contents are sufficiently cooled a nice, yellow cake can be taken from the kettle and the loose, coarse impurities that are found on the under side scraped off or rolled off with the back of a case-knife. The heavier refuse is always found in the bottom of the kettle, but the lower part of the wax cake contains more or less of about the same weight as wax, so that gravitation alone will not separate the two.

The wax cleanser, which the accompanying drawing (Fig. 1) represents, does this to perfection. It consists of a graniteware pan 4 in. high and 14 in. across the top with a screen frame 12 in. in diameter to allow its entering the pan to about one-half of its depth. It is held in position by a piece of light bandiron with a hook on each end (See Fig. 2) to catch on the rim of the pan. It slips in its place as easily as a well-oiled jackknife opens.

The screen, separately shown at Fig. 2, is a rim of heavy tin covered by 12-to-the-inch brass screen, with a short little tin brace soldered on each side of the rim to keep it in its place.

To operate the cleanser is very simple, but it requires some exactness. About 2½ or 3 lbs. of wax from the first boiling is placed in the pan with sufficient water to fill the pan nearly half full when all is melted. With occasional stirring and ten to fifteen minutes moderate boiling the content is thoroughly liquified. The screen is then inserted and fastened by the bandiron hooks, as shown at Fg. 1, when boiling water is turned onto the screen until the pan is reasonably full. After a few minutes' simmering the lights of the oil stove are turned out and the wax is allowed to cool. The cake of wax obtained by this process is as nearly perfect as any home-made article can be produced. There is only a very slight discoloration on the bottom, but by means of a sharp steel-plate scraper (I use one 3x4 in.), this can be easily removed.

To make sure that the quality of my product is in every way perfect I give my wax a third melting in a so-called "water jacket." The basin I use for this purpose holds, with a small amount of water, a 2-pound cake. I set this on my little oil stove in a larger basin full of water, and when melted turn out the middle burner, and the two side ones to about half power. This allows the wax to cool very slowly and gives the last foreign matter that the wax may still contain a chance to settle to the bottom. Consequently this last melting also shows a little discoloration at the bottom of the cake that needs a slight touch with the scraper to make the job complete.

All the scrapings from the three boilings are carefully collected. After a sufficient quantity is gathered they are again run into a cake, which, after being scraped at the bottom like the others, is little, if any, inferior to the common stock. All the drainings from the cappings are also carefully gathered up; they are used as feeding material at the closing of the honey-flow to finish unfinished sections. And herein lies the greatest benefit I receive from working up my cappings as fast as they are made. At first it may seem like unprofitable work at that time of the season, when the beekeeper has plenty of other work crowding. But it is like keeping a garden clean. If we keep ahead of our work, if we keep the grass from sprouting, we can do it with one-fourth, perhaps with one-tenth of the time and labor it would require after the weeds are allowed to grow over our heads. It is the same in our bee and honey business.

With comparatively little effort we can keep our work in first-class order if we don't neglect to clean up these little odds and ends when we have a chance. If our cappings are allowed to accumulate until all available dishes and boxes are filled, they are constantly in our way and are pushed into dusty corners, which does not improve the quality of our wax. And the longer we postpone an unpleasant job (the making of wax is looked upon as such by the majority of beekeepers) the harder and more unpleasant the task seems to grow; our daily work then becomes a burden, which, if taken in time, would have been a pleasure.

La Salle, N. Y.

(We can testify to the high quality of the wax produced by Mr. Greiner, with his process, which, however, is not suitable for the large producer.—Editor).

A Ventilator for Bees

M. M. Hale, of Mississippi, has a very ingenious device for ventilating his colonies during the heat of summer. It consists of a separate bottom-board which is inserted in place of the regular one, which has first

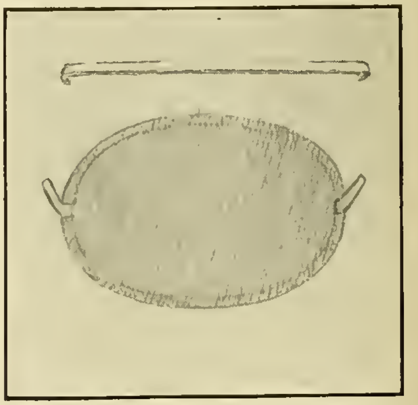


Fig. 2. Screen and Strap-iron Band for the Wax-cleanser.

been removed. As seen by the illustration, the ventilating bottom is deep and has wire screen on the sides.

Many bottoms similar to this have been used at different times by beekeepers and several have been described from time to time in the bee journals. They have three drawbacks, however, to more general use. In the first place, they increase the cost of equipment. In the second place, much care will have to be taken or the bees will build combs in this deep space below the frames. Thirdly, in localities where propolis is found the bees will be apt to deposit large amounts of this in and around the edges of this board, as their tendency is to stop up all holes with propolis.

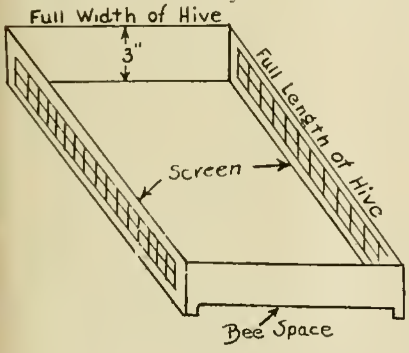
Successful Beekeeping, The Pivotal Point---Man

By D. M. MacDonald.

THE man (or woman) is undoubtedly the great and prime factor counting towards success in apiculture. Some one may say, and rightly so, that the seasons are not within the power of man to alter, and that on them depends our success or failure. That is taking by far too narrow a view of our industry. The critic here does not approach the matter from a proper focus or look on it in the right perspective. As well say that the farmer's success depends on the seasons alone. That is not more than a half truth. Neither is it true in apiculture any more than in agriculture.

The man of energy, push and enterprise rises above circumscribed circumstances, after turning semi-failure into full success. Adverse influences brace him up to new efforts. The bad season, which only comes periodically, teaches him lessons worth learning, whereby, when the good seasons come, as come they must, he can benefit to the full from the experiences gleaned and the knowledge acquired from the days of adversity. The man in countless ways dominates the situation, and over a series of years comes out triumphant. The weakling, the man without grit, proves a failure; that goes without saying, but it only goes to prove beyond controversy that the man is what may be called the pivotal point on which either success or failure hangs.

Another critic may maintain that location is the chief factor. It counts largely, but all the same it is only a sub-factor. Wherever ninety-nine men out of the hundred may be planted down there they have to remain and simply adjust themselves to circumstances and surroundings, and each man with perseverance can rise above difficulties and carry on the industry successfully.



A Bottom-Board Ventilator

Messrs. Holtermann and Byer in the far North and Messrs Scholl and Poppleton in the far South, make beekeeping an eminent success. This they do in spite of Arctic cold or tropical heat; in spite of frost and snow on the one hand or persistent heat and drought on the other. The man here again proves the governing factor, the ruling influence securing success. This convincingly shows that weather and surroundings have to be relegated to secondary positions. The man, the prime factor, rules and controls so many minor factors that he proves the dominant force taking first place.

Only once in a long period can we find a Dr. Miller, but in a lesser degree can't we all call up mental visions of men coming out successful in spite of even adverse circumstances?

Let us take, for instance, three beekeepers side by side. One comes out triumphant, a second has only a semi-success, the third proves a failure. The question arises, Why? Who can doubt it is something inherent in the one man lacking or quiescent in the others? Perhaps a love of the bees, a love of nature as a whole, goes far to account for the first man's success. It keeps him in the straight path. Then a spirit of perseverance, even in spite of occasional difficulties or even setbacks, proves a sheet-anchor in qualifying him for the leading place in our trio. A score of other gifts or attributes combine to set the one man on the top of the pinnacle. Weak only, or entirely lacking in the others, their want accounts for failure or only a medium success crowning their spasmodic efforts.

Who will deny that book learning is a ladder aiding any apiarist in his endeavors to rise? By this it is not meant that a beekeeper should count on climbing each stile by simply reading bee literature on the point. Solomon long ago advised men to acquire knowledge, but he added, get "understanding." The man who "draweth out understanding" is his ideal. Our successful man climbed the ladder of bee knowledge step by step, and book learning greatly aided his ascent.

The man who has perused and reperused such works as those of Quinby, Root, Langstroth and a score of others, must be a better man as well as a better beekeeper than the man who shuns such works. They all aid in the acquiring of that understanding so eloquently yet pithily advocated by the sage Solomon. It should be remembered that these beebooks embody the knowledge and wisdom accumulated from the experiences of centuries. This hard-won knowledge is ours for the taking. The man who undervalues it has much to learn.

Apart from the acquired skill and knowledge the man has certain inherent gifts or qualities greatly aiding success in our industry. Take the question of temper and temperament. Bees at times are wary creatures and when handled without care and discretion may show the temper of wasps. As a soft answer turneth away wrath so a gentle, quiet response from the apiarist may soothe and pacify the little savages. The manipulator should keep his temper.

An even temperament, natural to some, counts in such a case. Imperturbable coolness wins the day by dispelling the nervous irritability of the excited insects. A species of courage is indispensable in carrying on this industry. So much of it at least as may be designated steadiness of nerves is essential to success of the highest kind. This is, fortunately, easily acquired. At first, in the novitiate days, it may be wanting, but to a man with an equable temperament, each successive sting counts in favor of progress. Others do it, why should not we?

Ancient beekeepers understood all this well, and old beebooks treat the subject lovingly. The man, in their eyes, was the pivot on which success depended. "Handle them quietly and leisurely," saith one, "and you may do with them what you will without hurt." "Goe orderly to them and thou shalt find them gentle as sheepe," says another. Gentleness was and is a prime requisite in handling bees. The man who thus handles them has gone a long way towards success in his beekeeping career.

Some men have a natural aptitude for certain pursuits or professions. Hence, perhaps, arise the positions in which are found our suppositional trio. The fussy man, the nervous man, the bouncing man, the man who is untidy, unclean or awkward in handling tools or manipulating bees, frames or appliances, will never be successful. And much more will these points prove a detriment to any aspirant in our calling when he starts to handle honey. On that rock more men make shipwreck than on any other.

It will be noted that mere man does not get all the honor and glory attendant on eminent success in apiculture. He, or she, is the pivotal point on which success depends. In some respects the ladies tower above us. Of old the woman of the family was the chief beekeeper, and it may be safely predicted that, in the future as in the past, the other sex will take a leading place in carrying on this fascinating industry.

The text on which the above is based, the pivot on which it is hung, may be found in an autograph inscription on page 86 of the last volume of the American Bee Journal, over the signature of C. C. Miller. It is worth quoting: "For best success, get pure stock, keep tab on every pound of honey taken from each colony, then breed from the best storers that are all right in color and temper."

Note well that this grand old man, the associate editor, a leading light in bee literature, again and again and again, in his few brief words quoted, makes the man the dominating influence, the pivotal point, the chief and prime factor, insuring success in apiculture. He himself is a living example of the truth of the statement.

Banff, Scotland.

No. 25---Honey-Producing Plants

By Frank C. Pellett.

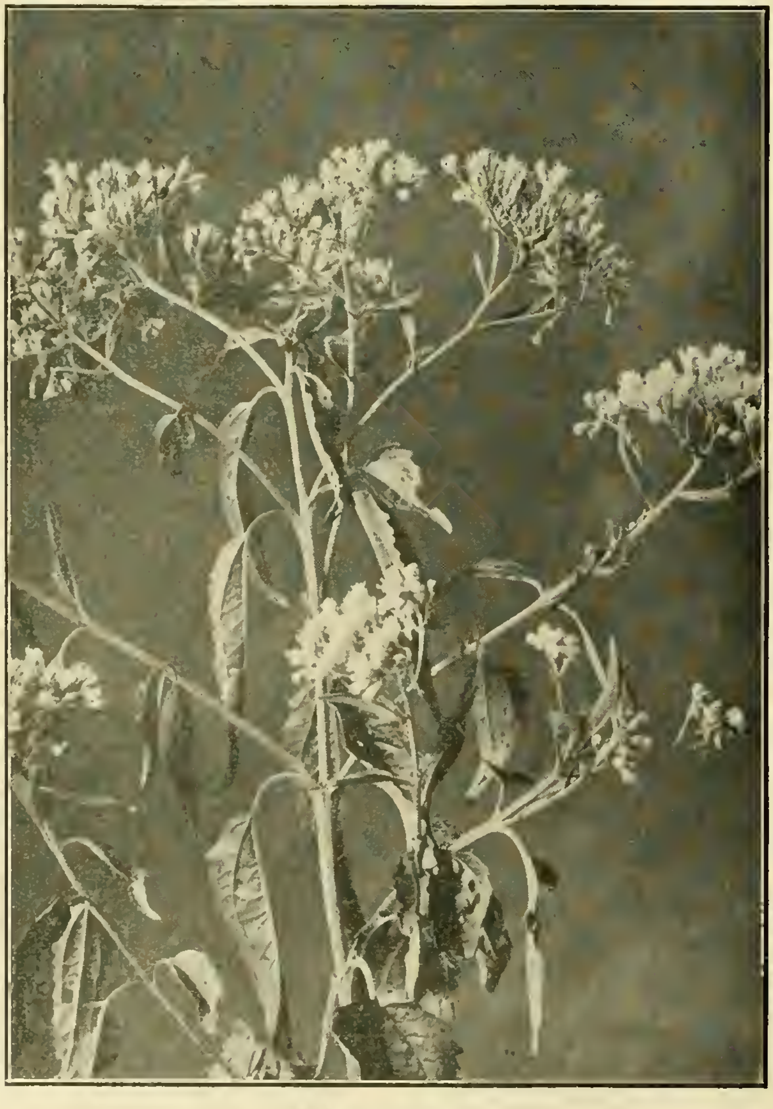
Photo by J. M. Buchanan.

WE have previously presented the picture of one species of boneset (March, 1915), and now, through the courtesy of J. M. Buchanan, of Tennessee, we are able to offer another. The first one shown, Eupatorium urticaefolium, is common in western Iowa woodlands. Although the bees get some honey from it, it is not the best species for honey. E. perfoliatum is reported as a honey plant of considerable importance in several of the northeastern states and Canada. It is commonly known as thoroughwort.

The picture shown herewith is Eupatorium ageratoides, a species common in the south, Tennessee to Georgia, and to some extent in Alabama. It is also found in the north, being listed from Canada and New England.

According to Mr. Buchanan's testimony this species is common over the state of Tennessee, but only yields honey in the northern part. He reports the honey to be a light amber of strong flavor. The yield comes in August and September.

There are 475 species of Eupatorium known, many of them found in tropical America. Some are found in Europe, Asia and South America, so that the plants have a very wide range. Forty-five or more species are common to North America. Whether all, or nearly all, yield honey we have no records to prove.



BONESET, COMMONLY FOUND IN THE SOUTH.
(Photo by J. M. Buchanan.)

Locating Your Apiaries

IN these days of high prices many of our young beekeepers will be seeking to increase their holdings in bees and some of them will wonder just what should govern the locating of home yards or of outapiaries.

There are four points to be carefully considered in the choice of apiary locations. The very best places for honey flora should be chosen. The apiary site should be easily accessible. It should have proper protection, and, lastly, overstocking and overlapping of ranges should be avoided.

Flora

Probably a large number of expanding beekeepers will prefer to remain in their present locations rather than risk a move to new fields, even if the flora of the new section seems more alluring. There is often a great difference in flora within a radius of ten miles or less. One apiary may have access to early fruit bloom which will stimulate the bees for the main harvest, another may have advantage of fall flowers which will assure the colonies going into winter with bountiful stores, while a third, may have such a remarkably favorable main crop flora that it overbalances the advantages of the other two.

Choose then, first, the location which seems the most favorable for a main crop flow, whether it be alfalfa, clover, sweet clover, basswood, or sage. But in doing so do not ignore the lesser honey plants which may do little in yielding surplus, but which may go a long way towards determining the condition of your bees for the main crop. Among these may be mentioned fruit bloom and dandelions in spring, sweet clover in midsummer, and the fall flowers later on. In every locality the list of these minor plants will be different. It is your task to find out just what your section offers.

The white clover producer may look with favor on the minor flow from fruit bloom, while the beekeeper with sweet clover as a main crop may want to use the light white clover flow to build up his colonies.

Accessibility

An apiary should be easily accessible to the owner. This is even more imperative now than it was in the days when the automobile and light trucks had not begun to make inroads into the tasks of the horses. Not only should the apiary be accessible to vehicles, but the location should also be of a sufficiently smooth nature so that the work of hauling the honey out or of carrying it will be made as easy as possible.

Protection

Avoid placing your apiaries where they will be exposed to the full sweep of the winds. For the northern climate a gentle slope to the south is desirable. Lacking this, a location behind a natural windbreak of trees or shrubbery is good, or if necessary an artificial windbreak may be constructed.

Outapiaries should be well inclosed or in proximity to neighboring houses whose inhabitants will be glad to see that no harm befalls them if a pail of honey is offered them from time to time. It is also desirable to have swarms cared for in the same manner.

Many colonies are wrongly placed where water may inundate and cause large losses, or at least great inconvenience in moving. Naturally there are localities sufficiently alluring for the beekeeper to risk the chance of occasional flood in order to profit by the heavy crops. These are scarce, however.

Overstocking and Overlapping

Since you want to get a maximum crop in the location chosen, it would be folly to plant yourself beside a neighbor's apiary of two hundred colonies when the available nectar within a two-mile radius was only sufficient for the best results with say 180 colonies of bees. The neighbor would already have too many, without yours.

The same mistake would be made if you located two of your apiaries within a short distance of each other so that the ranges of the two overlapped.

Every beekeeper should make a chart of his immediate neighborhood, with the location of all principal apiaries and the available flora in different parts, so that he may be competent to judge as to the value of any spot as a location for bees.

The accompanying chart gives an idea of what may be included in such a drawing.

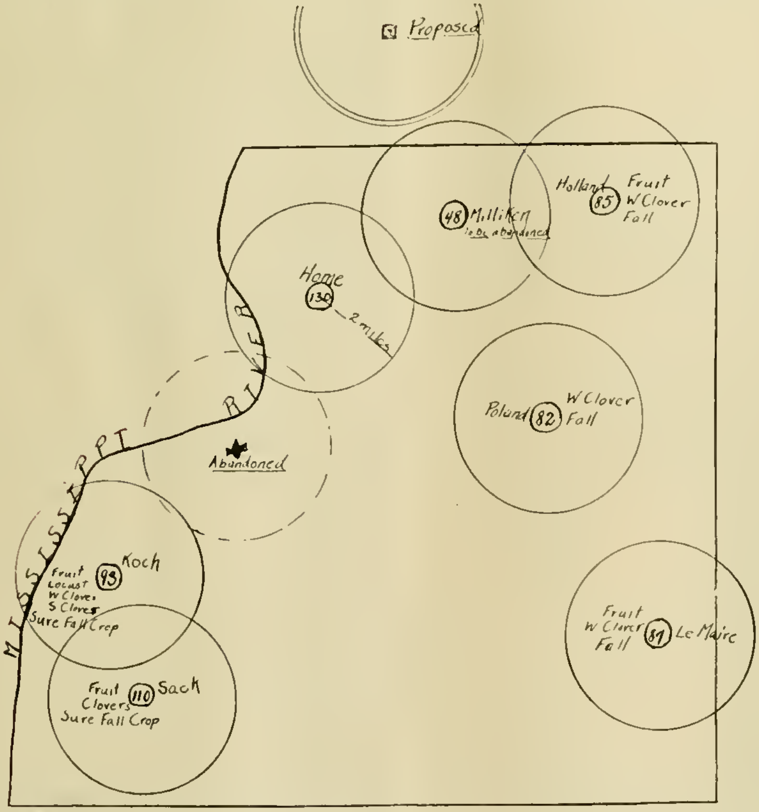


DIAGRAM SHOWING LOCATIONS, ABANDONED LOCATIONS AND ONE PROPOSED, OF THE DADANT APIARIES IN 1917.

In very few instances can any single location supply all the requirements. It is for the beekeeper to judge of the best locations, and he must have intimate knowledge of his section to do it.

How the Bees Saved America

Courtesy of The Sunday School Advocate.

THE brave patriots of the American Revolution were having a particularly hard time of it in the summer of 1780. General Washington and his ragged, half-starved soldiers were in camp just outside of Philadelphia, where it was certain that the enemy was getting ready to make an important move.

Man after man had risked his life trying to get their secret, but so far no one had been able to give Washington the important news without which he dared not risk his small force in battle.

But the great Washington, himself, scarcely took the independence of the colonists more seriously to heart than did little Mistress Charity Crabtree. Despite her prim Quaker ways, no eyes could spark with greater fire at the mention of freedom than those that smiled so demurely above her white neckerchief and plain gray dress. Charity was a soldier' daughter, and though his patriotism made her and her brother John orphans, when the boy also left to fight for his flag, Charity did not shed a tear, but handed him his sword and waved him godspeed. Though she was all alone now and only twelve years old, the little maid kept a stout heart.

"If I hold myself ready to serve my country, I know the time will come," she said, as she walked back from the gate through the fragrant lane, honeycombed with beehives. "Meanwhile, I must keep my bees in good order."

Charity's father had been a bee farmer, and he kept all these hives at the entrance of his lane, so the bees could search the highway for wild flower sweets. One of his last acts was to send a beautiful comb of their honey to General Washington, whereupon the General had smacked his lips and said: "Those bees must be real patriots. They give the best that is in them to their country."

Charity stopped now to notice how well the bees were swarming. They seemed particularly active this morning, but she was not afraid of these little creatures who do not sting unless they are frightened or attacked.

"I shall have a great many pots of honey to sell this fall," she thought. "It is good Providence who inspires the bees to help me keep our little white house all by myself, until brother John returns." Then suddenly the little Quaker maid turned pale. She stopped for a second with her hand to her ear, and then she ran quickly to the highway. These were terrible times, when, at any moment, bullets might whizz about like hailstones, and every good colonist lived tensely, in fear the little American army would be captured and their brave fight for independence lost forever.

It was a man in citizen's dress who galloped down the road. His hat was blown off and he pressed his left hand to his side. When he saw Charity he just was able to rein in his horse and, falling from his saddle, draw her close so she might catch the feeble words he muttered between groans.

"You are Patriot Crabtree's daughter?" he murmured, and the girl nodded, as she raised his head on her arm.

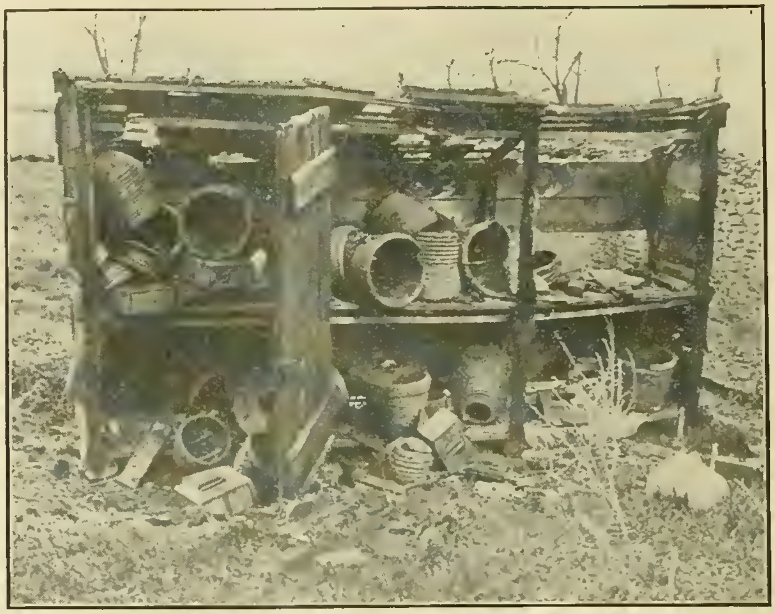
"I am shot, I am wounded," he gasped. "Leave me here, but fly on my horse yonder to General Washington's camp. Give him this message: 'Durwent says Cornwallis will attack Monday with large army.' Do not fail him!" cried the man. "Be off at once! The enemy is pursuing close."

Poor Charity had just time to repeat the message and assist the fainting man to a grassy place under the elm tree's shade, when the air thundered with a thudding of hoof beats, and before the terrified girl could gain her horse, a dozen soldiers leaped over the garden wall at the back of the house.

"For my country!" the plucky maid cried, and leaped to the saddle. But even then she realized that if once the British saw her they could easily remount their own horses, evidently left on the other side of the wall, and so capture her and prevent her from reaching Washington. As it was they discovered the unconscious soldier, whom they quickly surrounded by a guard, then spied the fleeing girl and immediately gave chase.

"Ho, there!" they cried. "Stop, girl, or by heaven we'll make you!"

They crowded after her into the



AN·APIARY IN THE WAR ZONE, OR RATHER WHAT WAS LEFT OF THE APIARY AFTER THE GERMAN RETREAT IN NORTHERN FRANCE LAST SPRING.—International Film Service.

mouth of the lane, while Charity cast about hopelessly for some way of escape. Suddenly, with the entrance of the soldiers, the bees began to buzz with a cannon's roar, as if to say, "Here we are, Charity! Didn't Washington say we were patriots, too? Just give us a chance to defend our country!"

Like lightning, now, Charity bent from her saddle, and seizing a stout stick, she wheeled around to the outer side of the hedge that protected the hives like a low wall. Then, with a smart blow, she beat each hive until the bees clouded the air. Realizing from experience that bees always follow the thing that hits them rather than the person who directs it, she threw the stick full force at her pursuers.

As Charity galloped off at high speed she heard the shouts of fury from the soldiers, who fought madly against the bees. And, of course, the harder they fought, the harder they were stung. If they had been armed with swords the brave bees could not have kept the enemy more magnificently at bay.

While Charity was riding furiously miles away, down the pike, past the bridge, over the hill, right into Washinton's camp, her would-be pursuers lay limply in the dust—their noses swollen like powder horns. When the little maid finally gained admission to Washinton's tent, for to none other would she trust her secret, the great general stared at her gray dress torn to ribbons, her kerchief draggled with mud and her gold hair loosened by the wind. But Charity had no time for ceremony.

"I have a message for thee, sir," she said, standing erect as a soldier beside the general's table. "I have ridden these many miles while a dozen of the enemy have been kept at bay so I might bear it."

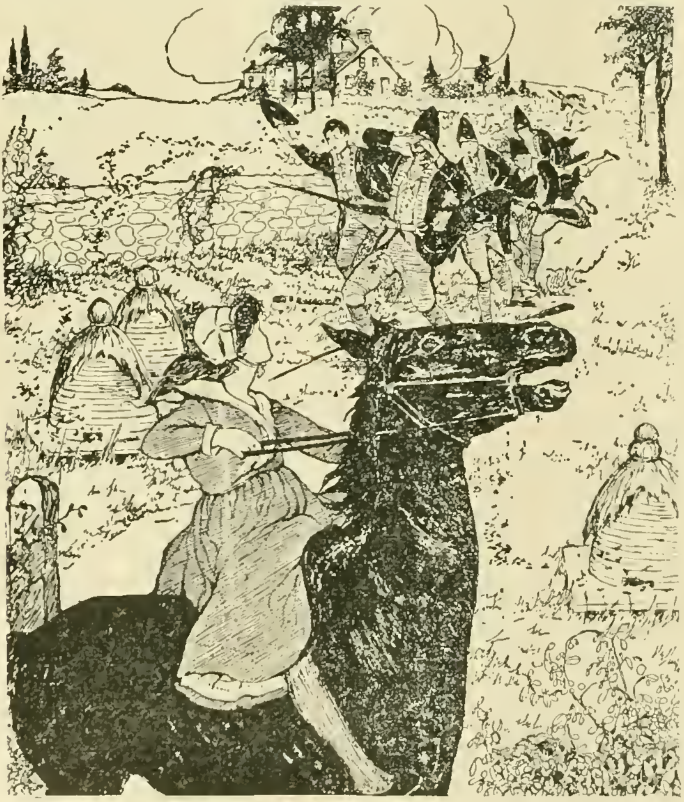
When she gave Washington the message he sprang from his seat and laid his fatherly hand upon her shoulder.

"The little Quaker maid has saved us," he said, and his voice rang while he looked deep into her gray eyes, lighted with honest loyalty.

"I brought the message only as I was directed, sir," she said. "It was my bees that saved their country."

You can imagine Washington's surprise and that of his officers who crowded in with warm praise for the girl, when Charity told them of the story of the patriotic bees.

Washington laughed. "It is well done, Little Miss Crabtree," he cried, warmly. "Neither you nor your bees shall be forgotten when our country is at peace again. It was the cackling geese that saved Rome, but the bees have saved America."



SHE THREW THE STICK FULL FORCE AT HER PURSUERS.

Protection of Small Apiaries

By A. F. Bonney.

I READ that there are 15,000 tons of corrugated paper made daily in the United States, and after being made into shipping boxes and other things probably ninety per cent of it is wasted by being thrown out or burned.

Needing some protection for my supers in my method of demareeing, I conceived the idea of utilizing this stuff, and finally evolved the following plan:

Make a form of soft pine lumber half an inch longer and wider than a Langstroth hive and eleven (11) inches deep. This need not be closed on the bottom. I say soft pine, as nails are to be driven into it and pulled out.

Having cut apart corrugated paper packing boxes, which any storekeeper will give for the asking, cover the top of the form with pieces which will come to the edges, holding them in place with lath (not cement) nails, and then treat the sides the same way. Next cover all cracks with strips of tough brown paper, while cloth will be rather better for binding of the sides, ends and tops. The next and future steps are to fit other pieces to top, end and sides, giving the first layer of pasteboard a coat of rather thick glue, and holding each layer in place with nails. Allow to dry between each layer, which, in a warm room, will not take long. The nails are, of course, removed from each layer when dry. The corrugations of the paper should run lengthwise on sides and ends, as much as possible, so that the air spaces will be sealed tight.

There is no limit to the thickness of the various layers. An inch on top and half an inch or more on sides and ends, for the paper costs nothing and glue is cheap, and I think an inch will afford as much insulation as two inches of other material, as paper is a poor conductor of heat, and the air spaces made by the corrugations add to it.

Buck Gove, Iowa.

Successful Wintering

By W. E. Green.

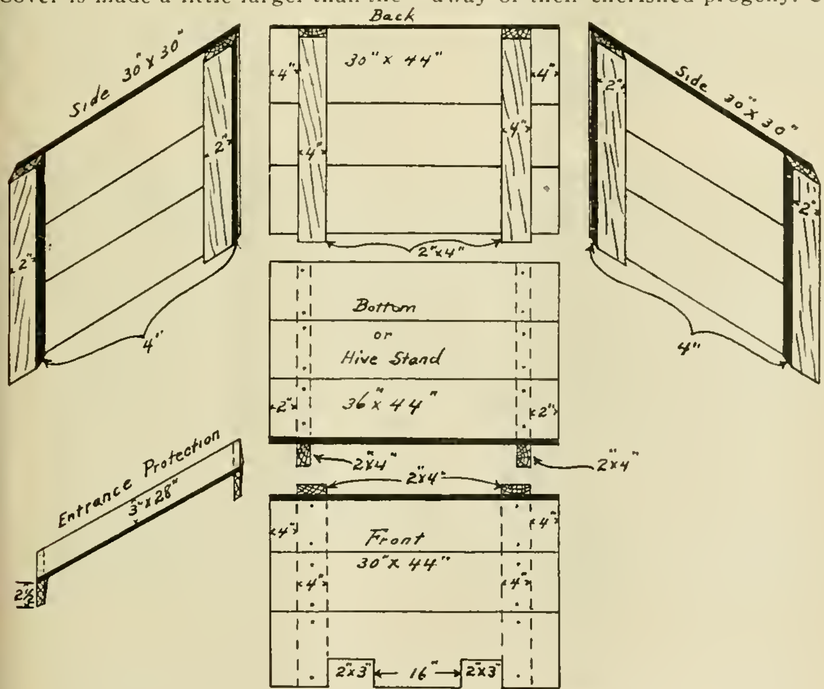
YOU will notice by the drawing that my case is for two colonies and consists of seven segments, all of which are made of 1x10-inch and 2x4-inch rough pine; the bottom is used as a permanent hive stand, the two colonies are simply shifted to each side in the summer time, placing them about 10 inches apart, then the other segments are piled one upon another, in this way taking up very little space.

In the fall the two colonies are moved together in the center, then the sides, back and front are set up and tacked with two six-penny nails at each corner, the entrance guard placed down in front of the hives, straw packing placed around them tightly, then the cover is put on (Cover is made a little larger than the case and covered with cheap roofing paper, also nail the two cross-cleats so that they will fit inside to keep it from blowing off.)

I have never lost a colony since wintering in these cases, and every year always winter a few three-frame nuclei with soft candy feed. I have six three-frame nuclei now that are just as spry and "sassy" as they were last September.

The big advantage of this case is that one man can handle it very easily.

Indianapolis, Ind.



DETAILED DIAGRAM OF AN OUTSIDE CASE AS USED BY W. E. GREEN.

How Bees Die

By Dr. Brunnich.

FROM one hundred thousand to two hundred thousand bees die every year, from April to August, in a mighty colony, while in the time of rest, in the bees' winter, from September till March, in our latitude, there will perish only a few thousands of them. In many forms death approaches the little pets; by far the majority die on the battlefield of work. They say that work prolongs life. With the busy honey-seekers the contrary is true. In the time of repose bees may become nine months old, but in spring and summer, when they are at work, they often reach only a term of four weeks, if they do not succumb earlier by an accident, owing to their numerous enemies, among which one of the greatest is man.

In spring, April and May, a severe death cause is weather. The inhabitants of the waxen home find in their artistically built store-rooms albumen and carbohydrates—pollen and honey. But for securing water, the indispensable element needed to prepare the baby food, they are compelled to fly out, to avoid the pining away of their cherished progeny. Unhappily they are able to store the crystal element of life only in a limited degree, first in their own bodies which, saturated with water, may deliver it from one to another or to the petty alabaster worms; secondly, in the food which is liquified with water. But much of the precious substance is needed when there are to be fed 10,000 or more infants three to eight days old, and the stores within their own bodies and in the cells become drained after a series of bad days. The young cry for food; water is needed, and the old guard rushes out in inclement weather to bring the coveted liquid from the river, the pools or the springs. But, oh, the cold liquid chills the venturesome workers and many a brave bee is paralyzed with her filled knapsask and will never again see her beloved home.

In summer, the real time of harvest, the assiduous citizens of the hive destroy themselves by heavy work. When they find honey they do not allow themselves any repose; they are busy during the very night. By fanning in array on the alighting board and through the hive and back again, they perform an energetic work of ventilation, an indispensable labor, for the atmosphere of the hive is constantly becoming laden with poisonous carbonic acid gas by consequence of the strenuous work and great numbers of the indwellers. It is also needed to keep down the heat to a normal degree.

The nursing of the brood is exclusively done by the young bees. But besides this, there are plenty of tasks. When the insect has accomplished its transformations and has emerged from the cell, it is necessary to burnish the cell, i. e., to clean it and coat it with an extremely fine layer of fresh wax. They also carry the nectar from one cell to another, which helps to condense it or mature it, when a part of the water it contains is withdrawn. The new buildings and repairs are carried on by the house bees.

By this unflagging activity the faithful citizens of the community wear themselves out, the hair down, the wings are worn by constant crawling in the blossoms, among the plants, and back and forth in the hive. By accidents they lose claws, and even legs; the inner organs, glands and muscles are exhausted. Within a few weeks the industrious worker has grown old, but it summons the rest of its energy to continue the work. Soon it may be no longer able to return. It may meet its death fainting upon a blossom, or in the flight home it may be unable longer to struggle against the wind, or a sudden rain may beat it down with its burden to where it will not have the strength to rise again. A wornout bee, feeling its approaching end, will nevertheless leave the hive, crawl to the alighting board, drop to the ground, still struggling to work, and will die in loneliness. No bee that can drag itself will die in the hive.

The fall time of the beehive comes

in our country at the end of July. The bees can no longer find much in the fields, the brood is reduced and the colony seemingly grows old. In the same manner that an old man becomes avaricious, in the old colony awakens the greed of property. And with this greed, this desire for the liquid gold, the honey, many bees acquire an ugly quality, the only vice of these virtuous citizens, the desire to secure wealth by all means—robbery. Generally those bees who cling to this disdainful trade, this qualified trick, are old bees. Hasty and restless, they fly about strange homes, where they scent coveted treasures, to enter them and steal the honey. But the vigilant amazons are on the watch and recognize the strangers, and grasp the impudent ones who dare to alight. Fierce struggles arise and many an enemy may perish. One may see couples of bees in deadly embrace, the sting of each fixed in the body of the adversary. Many a bee loses its life in such struggles.

Other bees, seemingly more honest, seek sweets which are not to be found in flowers, but abroad in honey-rooms, in sugar factories, in confectioneries and, especially in autumn, in wine or cider press rooms. Thousands of the poor insects are there drowned, falling into the liquid or filling themselves till no longer able to crawl.

After the bee-autumn, when the prudent inhabitants of the hive have sealed every crack with resin, when they have stored their provisions in fittest places, the bee-winter comes. This is the time of rest for the industrious insects. They remain quiet and take flight only when the weather is warm enough, to satisfy their need of emptying themselves. Peaceably and economically they live upon their provisions, to keep warm their little home, that their mother may not become chilled. The colder it is out-of-doors, the closer they cluster about the warm center. They form a spherical cluster, interrupted only by the thin wax wall of the empty cells. The bees nearest the food take it and pass it to the others. After filling their sacs some crawl into the empty cells, sleeping there till hunger compels them to give the room to others. If any of the old bees seek to leave the cluster they may chill and fall to the bottom-board. When a warm day comes, it is one of the first tasks of the healthy ones to carry out the corpses of their dead sisters.

These are the ordinary kinds of deaths of the bees of a healthy colony in ordinary conditions. Without going into details, I may say that quite a number perish by different enemies, spiders, wasps, hornets and a number of birds. But more important are the minute enemies, the bacteria" which kill partly grown insects as well as the full grown bees and so are sometimes able to destroy entire colonies.

One of the worst enemies, which destroys many colonies, especially in winter, is "hunger," caused generally by a niggardly or unmerciful owner. When the provisions are exhausted the poor creatures can no longer produce warmth, since their fuel—honey—is spent. The temperature sinks until all the bees, with the queen, are frozen and die without a complaint. If we examine such a dead colony we find the little lifeless bodies crowded closely around their dead queen and the empty cells filled with dead workers. The artistic wax cells whose wonderful construction fill us with admiration and which serve as storerooms for the honey and as cradles for the brood, have now become the coffins of the inhabitants.

I said that the greatest enemy of bees is man. The killing of the industrious honey-gatherers with poisonous vapors of sulphur is no longer practiced in German or French Switzerland. But in Tessin and Valais they still kill the bees in autumn, selecting the lightest and the heaviest hives to secure honey and wax. The remaining colonies are permitted to live and swarm the following summer. So the game begins again.

The drones, the poor, abused, calumniated drones, die mostly of hunger. When the question of progeny is settled and the ill-fated males are deemed superfluous, the bees simply drive them away from the food. They may be driven to a dry corner of the hive, or to seek death out-of-doors. If they will not go deliberately, the pitiless old maids drive them forcibly. I have never seen a bee use its sting upon a drone, it being evidently unnecessary against the weaponless strong sex. The much celebrated drone slaughter is only the harsh throwing out of the poor fellows by the workers, who pinch them in the legs, wings, antennæ, or ride on them, till the tormented ones escape through the entrance.

Only an infinitesimal number of drones die in full vigor, those who have the good luck to mate with a virgin, and who expire spasmodically to afford life for the hundreds of thousands of their progeny, the workers of the future.

What about the chief of the colony, the queen? Nearly every mother who has given life to hundreds of thousands and has been fondled by them during her entire life of three or four years, dies of decrepitude. Previous to her death she lays both drone eggs and female eggs in the proper kinds of cells. The workers evidently understand the necessity, since they feed these larvæ in a different manner. The first born queen kills her sisters still in the cell. She soon becomes fertile and begins her life's function. By her side her mother may remain a while, sometimes for months, and when death approaches she may seek to leave the hive, if death does not reach her before.

Unfertile queens often die in a duel with a rival, when more than one emerges at the same time. Furiously they rush upon each other and try to drive their sting into the adversary's body. The poison of the queen seems to act speedily, for a queen stung by another will die at once, while a queen stung by a workerbee may live for a long time, sometimes for years. It would require too much space to go into the detail of the death of the queens, though this is also an interesting question.

Switzerland.

An Outer Case Plan

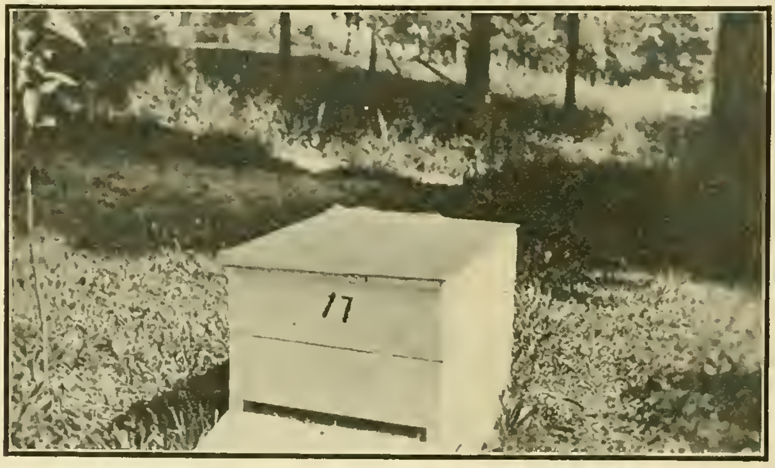
By H. M. Leach.

I MAKE my hive stands like the ones on the market, except they are one-half inch larger all around than a 10-frame hive. This allows for the three or four plys of slaters' felt I use around the body.

After the hive is set on the stand I wrap the slaters' felt around hive body and fasten ends with 4-oz. tacks. I now have an 8-inch rim the same size as the stand, one-half inch larger than the ten-frame hive, which I slip over the hive thus prepared, and it fits the hive stand perfectly.

I make my cover same size as rim, etc., 6 inches deep, and use it for summer and winter and cover it with red asphalt roofing.

This covers the entire hive and leaves room for a cover or mat from two inches to four inches thick for top cover over frame. I have used



NO. 1. THE HIVE IS PLACED ON A BOTTOM-BOARD WHICH IS ⅜ TO ½ LARGER THAN THE STANDARD 10-FRAME HIVE. THIS SPACE ALLOWS FOR 3 OR MORE WRANPPINGS OF SLATER'S FELT, OR CAN BE USED AS AIR SPACE. FELT IS VERY SUCCESSFUL.

this style for two winters and like it very much. It has been successful. It makes an excellent winter case and is excellent as a spring protection. As I make my own hive stands and covers, the only extra cost is for the 8-inch rim between cover and stand.

Hiram, Ohio.

LEGAL SERVICE DEPARTMENT

Conducted by Frank C. Pellett, Atlantic, Iowa.

Making a Noise When the Bees Swarm

Beekeepers are often amused by the antics of people who pound tin pans and make all the noise possible when the bees are swarming. There is much speculation as to the rise of the practice, which, of course, has no effect in settling the bees.

The probable explanation is to be found in old laws in European countries. An old French law provides as follows:

"When a beekeeper sees that a swarm is issuing from one of his hives, he is bound to announce the fact to his neighbors, and others, by making an outcry or noise; and he must immediately follow and secure the swarm if it leaves his own premises." Civil code, Art. 524., Section 5.

Immigrants from Europe very naturally followed the customs of the country from which they came. In time their children and grandchildren continued the practice without knowing the reason. It is absurd for people in our day to beat tin pans because the law of France, a century ago, required the beekeeper to make a noise when the bees swarmed.

Constitution for Bee Organization

"Will you give suggestions for a constitution to govern a local beekeepers' organization?" Florida.

We have had several letters asking for similar information. If it is the intention to incorporate, a local attorney should be consulted, since the different states have different regulations for incorporating. In most states the fee for incorporating, where the society is not organized for profit, is merely nominal, but the attorney will quite likely charge a fee of from $10 to $25. However, it is not necessary to incorporate, and few of the beekeepers' associations are incorporated.

All that is necessary is a simple form to follow with the business of the association. The best plan is to elect a competent set of officers and give them as much freedom as possible. It is a very wise provision to establish the custom of a frequent change of officers. In most cases where we find the same set of officers year after year we find the organization in a rut and see but little progress from year to year. New men do well for a year or two and then they exhaust their supply of new ideas. If new men are placed in charge they will work along new lines and the interest is kept up. If there are only a few men available who are suitable for officers, change them about often and come back to the same position more frequently, but don't make the mistake of making a one-man organization.

The following form is given only as a suggestion and may be changed to suit:

Brown County Beekeepers' Association.

CONSTITUTION

Article 1.

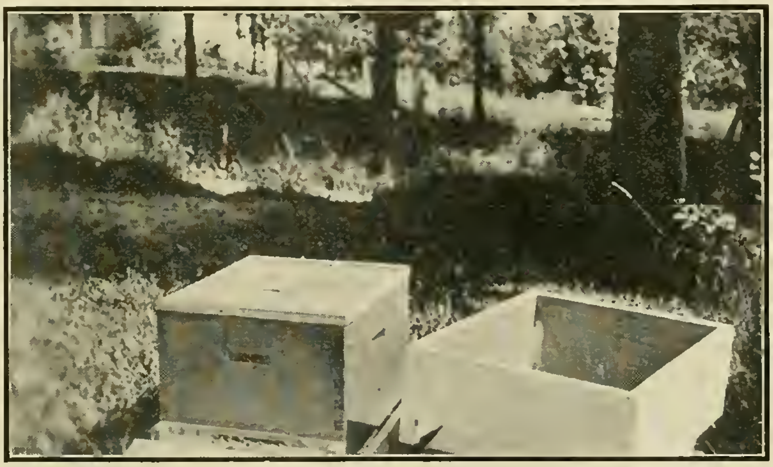
This association shall be known as the Brown County Beekeepers' Association with headquarters at Stoneville.

Article 2.

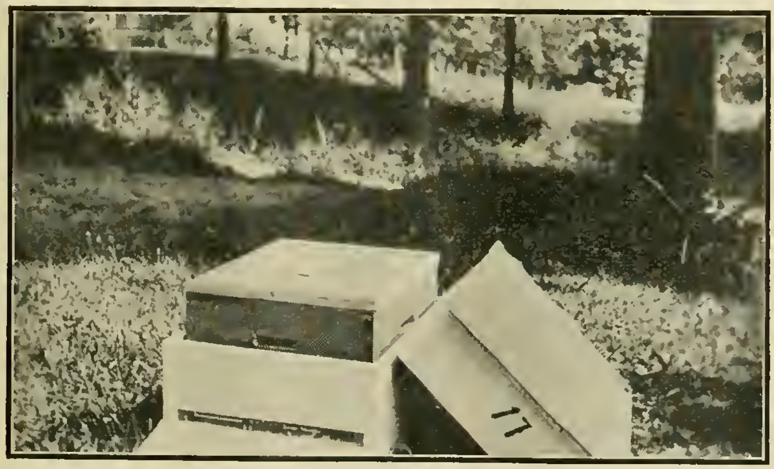
The object of this organization shall be to promote the interests of commercial honey production, to check the spread of disease among bees, to secure proper recognition for the industry and to spread information as to the best methods of increasing the output of the apiary and enlarging the market therefor.

Article 3.

The annual meeting shall be held at Stoneville on the first Tuesday in January and one or more field meetings shall be held at such time and place as shall be determined by the board of officers.



NO. 3. HIVE COVERED AND READY FOR THE WINTER BLASTS.



NO. 2. THE 8-INCH RIM PLACED OVER THE HIVE-BODY. PAPER LEFT OFF TO SHOW THE HIVE. WHEN THE FELT IS FOLDED OVER THE TOP AND THE COVER PUT IN PLACE, THE COLONY IS READY FOR WINTER.

Article 4.

The officers of this association shall consist of a President, Vice President and a Secretary-Treasurer. The election of the officers shall be held at the annual meeting and shall continue for the term of one year.

Article 5.

These articles may be amended by a two-thirds vote of the members present at any regular or special meeting called for the purpose.

BY-LAWS

I.

Any person interested in the object of this association may become a member on payment of $1.00 to the Secretary-Treasurer. Membership fees shall be payable annually and delinquent members shall not be entitled to vote.

II.

Honorary membership for one year may be conferred by a majority vote of the members present at any regular meeting of the association.

Honorary life membership shall be conferred only upon those who have rendered unusual service to the organization or who have attained unusual prominence in the beekeeping field. A motion to confer honorary life membership shall be presented to the board of officers in writing and must receive their unanimous endorsement. After such endorsement it shall lie over until the next annual meeting and receive the unanimous vote of members voting.

III.

The President shall preside at all meetings of the organization and of the board of officers. In his absence the Vice President shall preside.

The Secretary-Treasurer shall keep an accurate record of the meetings of this organization and of the board of officers. He shall receive all moneys due the organization and make disbursements only on order of the President.

The board of officers shall have entire charge of all meetings of the association, shall arrange programs, hire halls and attend to such other details as shall be necessary. The President shall appoint such committees as in his judgment are necessary to conduct the business of the association.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Robbing

My daughter (who lives next door to me) and I determined to invest in a few stands of bees and try to build up an apiary, as we live in the edge of a small town near a river with timber and plenty of bee pasture near.

We read somewhere that one should open the hives once a week and cut out all queen-cells and keep out burr-combs or correct anything that seemed to need it. We did so, and this week we went over all our hives, cutting out about a dozen queen-cells from six hives and cutting out all cross-combs, etc. Immediately the air was full of bees, both at her hives and mine, and all the bees at entrances of the hives seemed to be fighting. After a few hours they seemed to quiet down at my hives, and things are going on as usual, but they kept flying around one of her hives for three or four days, when she noticed that there seemed to be nothing doing at it, and opened the hive and found nearly all the bees dead and the upper parts of all the combs chewed up and every drop of honey gone and about a gallon of dead bees all over the combs and on the bottom of the hive, choking up the front of it.

It looked to me as if the hive might have been full of fighting bees and closed up the front entrance and nearly the whole colony smothered or starved.

The weather in this part of the country has been very hot and dry and the clover bloom has burned out.

Did we make a mistake in opening the hives during this month?

Pomona, Kans. Mrs. M.

It is not really necessary to open hives once a week. It is better not to disturb the bees unless there is some good reason for it. Once a year is often enough to clean out the burr-combs. Once in 8 or 10 days is often enough to kill queen-cells, and that only while there is danger of swarming, although that extends over a number of weeks, beginning in most places at or a little before the first surplus flow and closing with the last. But it should be fully understood that killing queen-cells will by no means prevent swarming in all cases. Sooner or later, in most cases, the bees will swarm in spite of killing cells. If you will read Dr. Miller's "Fifty Years Among the Bees" you will see exactly how we manage the matter when running for section-honey.

Fortunately, when running for extracted honey, you can get along with much less trouble by using the Demaree plan. Just before there is danger of swarming, or before any queen-cells are sealed, put all but one frame of brood in an upper story, leaving the queen with one frame of brood in the lower story with an excluder over it. In 8 or 10 days kill all queen-cells above the excluder, and that's all the killing of cells for the whole season, with little danger of swarming.

It is hard to say with certainty just what you did to start robbing, although the probability is that you left combs exposed when opening the hives. At a time when bees are not gathering, great care must be taken not to start robbing. A very little exposure of honey will do it; and when you see that robbers are beginning their work it is well to close up the hive till another time. In a time of scarcity there is generally a little less danger of robbing in the forenoon than later. Indeed, often it is better not to have hives opened after 9 a. m.

As already hinted, prevention is better than cure, but when robbing has actually started, close the entrances so that not more than a very few bees can pass at a time, giving the bees a better chance to defend themselves. Pile up hay or straw all around the hive and keep it well drenched with water. Some make a practice of carrying the robbed hive into a cool, dark cellar, leaving it there for a day or two, and putting an empty hive in its place, returning the hive to its stand in the evening after the flight has ceased. Other plans for managing cases of robbing you will find in your bee-book.

Women's Help in Beekeeping

I have read what you say in the July American Bee Journal about having women take more interest in the bee business. Had I not seen your name as writer for the women's department I would have thought it from some bee-man, or some woman who did not know the nature of a beekeeper's wife or daughter, for, to my knowledge, there is not another industry where women take more interest or do more to help the work along than in the bee industry. But here is where I find the trouble lies: women are peculiar beings (being a woman yourself, you ought to know.) We need, expect, and must have a certain amount of love, praise, and attention; and in this age, at a time when women are so capable, and are taking hold and helping in many industries, they should be counted in as husbands' or fathers' helpers, as the case may be.

You take a man who starts out for himself; as soon as he gets to a place where he can have a hired man, how quick he is to tell about it. But it seems that a bee-man's wife or daughter can work early and late—yes, I have known cases where they work all day in the bee-yard, come home and get a late supper, wash the breakfast and supper dishes (no dishes at noon, for they take their lunch), prepare food for the next day—no telling how far into the night it is, for they get no rest. Then up the next morning ready for another day's run. There are many things that a woman can do, and does do, to help in the business.

I can recall one incident where our folks were expecting to go about 18 miles to extract. I had just bought 50 pounds of peas to can, but that did not stop me. I took peas and jars with me (as we had a family living at one of the bee-yards) and canned them there.

I assure you from the pictures we see of eastern beekeepers' conventions, there are many women's faces.

We go to bee meetings and conventions, and many women attend. What for? After working hard the day before. to get good things together to eat (most bee-men's wives and daughters are good cooks), they will make a tasteful spread, which is one thing always appreciated by the opposite sex.

Then there is selling honey. Why, I have in mind one woman selling from year to year , until now she is quite an expert in the business. This same woman and her husband attend the conventions and bee-meetings. He gets up and talks (which, of course, he should do), and tells about HIS bees, how HE works with them, how HE sells HIS honey and crops, and that now HE has his business on a basis where he can get along without much help, and to better advantage. But how about the wife by the side of him?

Beekeepers, as a rule, are the most gentle, kind and generous-hearted people one can meet, but they need a little stirring up, in a kind way.

These are some of the reasons why women are not known as they should be in the bee industry. Their works are left out. Take the women out, and where is your industry?
NORTHWESTERN BEEKEEPER'S
WIFE AND HELPER.

If that article in the July number did nothing more than to call out this reply, it surely was not wasted effort. Our good friend is no doubt quite right in insisting that women do not always get the credit they deserve, and this is true in thousands of cases where beekeeping is not involved. But is not the woman herself sometimes to blame? When her husband talks about his bees and his success, is not the floor free for her as well?

There are women to be seen at conventions, and they are always welcomed, but they are always woefully in the minority. With tons of honey going to waste at this time when all waste is so disclaimed against, are there not more women who might engage in beekeeping to their own advantage and the advantage of the public?

If anyone has the impression that there are as many women as men who are beekeepers, let them look over the pages of this journal and count the number of contributors of the two sexes. Two or three women against a dozen or so of men. Is that because men are greater talkers than women?

We probably all enjoy reading what beekeeping women write, but we cannot have the reading without the writing. So let us hear from more of the beekeeping sisters. If "their works are left out," let them do their part toward making their works known.

MISCELLANEOUS NEWS ITEMS

Minnesota Fair.—Minnesota beekeepers should make a special effort to attend the 1917 State Fair, observe carefully the first year's results of a new management and classification of exhibits, spend considerable time at the exhibits of the University Division of Bee culture, and Minnesota Beekeepers' Association, and be sure to watch for a notice and attend a special meeting of exhibitors, Minnesota Beekeepers' Association members, and the honey judges—all in the Bee and Honey Building. Use the University Division of Bee Culture and the Minnesota Beekeepers' Association as sources of all bee information.

L. V. FRANCE,
Instructor in Beekeeping; Secretary
Minnesota Beekeepers' Association.

West Virginia in the Limelight.—West Virginia has suddenly jumped into the front rank by passing a good inspection law, providing for a State apiarist, in the department of agriculture, and a half dozen inspectors all at once.

The new law passed at the recent session of the legislature became effective in May. Mr. Chas. A. Reese, formerly an assistant at Ames, Iowa, is in charge of the work as State Apiarist. The three inspectors whose names we have are Mr. Stephen Davis, Mr. P. L. Jones and Mr. T. K. Massie. Although one of the smallest of our States, West Virginia, probably has the largest appropriation for support of the beekeeping work of any State.

A movement is on foot to organize the beekeepers of the State into a strong association to the end that the new department can work in close touch with the honey producers. Plans are being made for summer field meetings, a winter convention and also an exhibition of the products of the apiary. West Virginia has some good territory for beekeeping and good results will probably follow the work of the new department. Beekeepers of that State who desire assistance or information should address Mr. Reese at Charleston.

This office is already in receipt of circulars which have been freely circulated through West Virginia, urging the beekeepers to increase the honey production of the State. Names and addresses of the most reliable queen breeders, publishers and dealers are contained in one of the circulars. Among things recommended are the ten-frame Langstroth hive, full sheets, Italian bees, and the local purchase of bees where possible.

Bee Papers of the past and Present.—I cannot tell you how interested I was in your series of articles on "Seventy Years of Beekeeping," as published in the American Bee Journal. I was in close touch with the industry for over thirty years of that time.

Naturally, I noted with special interest the list of bee papers that existed for a longer or shorter time during the past fifty years. Many of them were started (and dropped out) during my intimate connection with the literature of beekeeping. I suppose some of their editors thought I was rather cool in my treatment of them, as I couldn't conscientiously encourage them in their enthusiasm to help on the progress of beekeeping in America, for I realized, as they could not do, the hopelessness of their undertakings. I knew of the many failures of new bee papers and it seemed too bad for any more to lose their good money in that direction. But, of course, anything that I said concerning new bee papers was misconstrued, and doubtless charged to what their editors considered jealousy on my part.

Still, for the most part I believe my relations with practically all the new bee papers were more pleasant and cordial than otherwise.

The American Bee Journal absorbed a number of the new bee papers during the nearly thirty years that I was connected with it. Both the American Apiculturist (edited by the late Henry Alley) and the American Beekeeper (published by

GROUP AT THE WEST WASHINGTON PICNIC LATE IN JUNE.

the W. T. Falconer Mfg. Co.) were taken over by me and their mailing lists continued with that of the American Bee Journal. Thus there were three "Americans" in one. The bee papers referred to were the best and longest-lived of any of the new bee papers.

It is just possible that there were others that were taken over by the American Bee Journal before my connection with it, which began with the spring of 1884.

For many years practically all copies of the new bee papers were preserved in the office of the American Bee Journal, and, finally, if my memory serves me rightly, I disposed of the whole accumulation to Mr. Morley Pettit, of the Ontario Agricultural College. So I suppose he has the most complete files of all the bee papers that were ever published on this continent.

I think that the beekeeping industry is quite sufficiently well served with the periodical literature of the present day, including, of course, the many excellent standard books on the subject. In fact, I do not see how any of the older publications could well be improved. But if they can be, it will come through larger subscription lists rather than by the creation of more new publications.

GEORGE W. YORK.

Blind Horse in Apiary.—A blind horse belonging to Charles Rice, of Durham township, got loose and broke into Mr. Rice's apiary, upsetting thirty stands of bees, and when discovered the poor animal was literally covered with bees. To afford it relief, Mr. Rice opened a gate and drove the horse into another lot, but the bees followed, lighting on two other horses, causing them to run wildly about until one fell into a ditch and broke his neck and the other was badly injured, while the blind animal was virtually stung to death.—Warsaw Bulletin.

This is not the first time that a blind horse has been killed by bees. Do not let any farm animal run freely among your beehives.

Comb Honey is Wasteful.—The Missouri department is circulating the following to encourage extracted honey production:

"Honey may be used as a substitute for sugar. Honey offers a potential supply of sweets which may be utilized to relieve the shortage of sugar. H. B. Parks, biologist of Palmer College and at present a graduate student in the University of Missouri College of Agriculture, suggests that consumers demand extracted honey, first because the wax of comb honey is valueless for food; second because the bees when producing comb use ten times the weight of the wax in honey; third the section in which comb honey is bought is valueless as food, yet it is purchased at foodstuff prices. The sections are made from linn or basswood, which is one of the heaviest nectar producing plants. By demanding extracted honey the linn or basswood trees from which the sections are made may be preserved for honey production.

"By demanding extracted honey consumers obtain clean honey, honest weight, and full food value. The extracting combs can be replaced in the hive after the honey has been removed and the bees can refill them without making additional comb. In this way the bees may be kept busy producing honey instead of spending a great deal of their time and using a great deal of honey for food in building new comb.

"By buying extracted honey the consumer saves human food, which would ordinarily be used by the bees in making wax, increases honey production, saves the trees and helps both beekeeper and supply dealer. Bulletin 138 of the Missouri Agricultural Experiment Station, Columbia, will be of value to persons who wish to produce their own honey."

Medal Premiums at Illinois.—The Illinois State Beekeepers' Association will give the following medal premium awards at its next annual meeting, to be held at Springfield on Wednesday and Thursday, Nov. 14 and 15, 1917:

On 150 lbs. extracted honey, the first a gold medal of L. L. Langstroth; the second, silver medal of Chas. Dadant.

On 150 lbs. comb honey, the first a gold medal of C. C. Miller; the second, silver medal of Moses Quinby.

Also cash premiums will be given on:

First, on 24-lb case of comb honey, $5; second on 24-lb. case of comb honey, $2.50.

First, on 24-lbs. of extracted honey, $5; second, on 24-lbs. of extracted honey, $2.50.

Conditions—Exhibitors must be beekeepers, and producers of their own exhibits, and may be from any State or from Canada.

No exhibit to receive more than one prize, and no two persons to exhibit from the same apiary.

Those who receive medals are not to be considered in the cash prizes.

Certificates will be issued to each one receiving a medal, giving them a right to hold the medal for one year. In the years following, if they shall have received the third certificate for the same, it shall entitle them to permanent ownership.

The awards will be made—by ballot—by the members present who are not competitors, and who have no interest with those competing.

It will be necessary for those who exhibit to notify the secretary thirty days previous to the date of our meeting, in order that space may be arranged for.

JAS. A. STONE, Sec',
R. No. 4, Springfield, Ill.

Washington Field Meet. — The Western Washington Beekeepers' met at the apiary of George W. Blair, at Gate, June 22, for their first field day and picnic. After dinner the various phases of beekeeping were discussed for two hours. All present reported their bees in good condition, demand for honey good and the price higher than usual. Everyone left thanking our batchelor beekeeper for his splendid hospitality.

W. L. COX.

The July Government Crop Report.—Of much significance is the crop report issued by the Department of Agriculture and giving resúme of crop conditions up to July 1, 1917. Ordinarily a little over 50 per cent of the honey crop of the United States is produced before this date.

According to the report all conditions this year are below the normal and very much below those of last year, which was by no means a record breaker. The condition of colonies on July 1 was 86 per cent, as compared to 94 per cent of normal in 1916. The condition of honey plants was 71 per cent, as compared to 90 per cent last year.

In 1916 the average per colony yield of the United States was, on July 1, 26 pounds. It was 21½ pounds in 1915, while this year it has dropped to 13½ pounds, or just half of what it was in 1916.

There is no doubt but that the season was late over the entire country this year, but certainly not late enough to make such a difference as between 13 and 26 pounds. Thus the report would indicate that the crop is very short. With the demand so exceedingly strong, prices are bound to be high, much higher, probably, than many beekeepers expect. We will await the next monthly crop report with interest.

Paper Containers Again.—We have a very interesting letter from one of our valued subscribers in the Republic of Argentina, which we reprint in full for the benefit of our readers. For local sales the paper bottles should be all right. They have yet to stand the test of long shipments:

"It appears that honey packages are getting to be quite a problem in the U. S. A., as well as here. I used to get all my jars and cans from the U. S., but the war has sent ocean freight up to such an extent that it is no longer possible to import jars or cans. I therefore ordered a trial lot of 1,000 paper pint bottles, as the freight on these is very much less, as they are light and occupy a small space. I had many misgivings about their suitability, but am now sorry I did not order a larger quantity.

These paper bottles are made of paraffined cardboard, and I found that they held liquid honey quite well, provided melted paraffine is put over the lid. This package sells easily, but it is well to have honey in glass jars as a sample of the kind in the paper bottles.

I got into some trouble with the content of the pint bottles. As I did not know how much a pint was I looked it up in a table of English weights and measures and found it to be 588 cc (cubic cm), so I sold the bottles as containing 800 grammes. I had several claims and on investigation found the American pint was but 473 cc, equal to about 680 grammes.

The paper bottle is a good package, cheap and rapidly filled. Attention has to be given to the bottoms, as they sometimes get unstuck.

JUAN CHRISTENSEN.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

It is inferred that all readers have access to the book "A Thousand Answers to Beekeeping Questions." This will avoid duplication in answering, as the book contains answers to practically all questions ordinarily asked on beekeeping. Subjects not specifically treated, or which are not clear to the reader will be further explained in this department at the request of any subscriber.

Swarming

1. I had a swarm issue July 2. Hived on starters in a clean hive they drew out 6 combs to a depth of 3 inches, then they left. What was the reason?

2. Why is it that only 3 of my 6 colonies swarmed this year? They all had 1-year-old queens.

3. Would a grape row 5 feet high, 10 feet in front of the hives, cause the bees to leave?

4. Are five-banded bees darker when young than later on? ILLINOIS.

ANSWERS—1. It may have been too hot for them. You should shade them in some way, and give abundant ventilation by raising the hive or leaving them partly uncovered.

2. There may be a difference in strength, and some colonies just naturally swarm more than others.

3. I do not see why it should.

4. I think not.

Rocky Mountain Bee Plant

I have a lot of waste land and am thinking of planting or sowing on this Rocky Mountain bee plant (Cleome integrifolia) for its honey production. What can you say of the cleome as a honey plant, and would it thrive well in this locality? Also, where can I obtain seed of this plant? PENNSYLVANIA.

ANSWER—From the little experience I've had with this plant, I should expect it to grow with you, but have some doubt as to great results from it.

Inspectors—Swarms Leaving

1. Is there an apiary inspector in Kansas?

2. I have some weak colonies. I am going to unite them. Is it necessary to kill one queen?

3. When my bees swarm they cluster and leave before I get ready. What can I do to make them stay longer? KANSAS.

ANSWERS—1. Geo. A. Dean, Manhattan; also S. J. Hunter, Lawrence.

2. No, unless there is a choice of queens and you kill the poorer.

3. Drench them with a stream of water.

Ants—Several Eggs in a Cell

1. I have my hives in pairs and have oilcloths as inner covers. Ants made their nest between inner cover and roof of No. 1. Every time I look through it I shake the ants off. I did that about three or four times, then they didn't come back. Then I looked into No. 2 and found a swarm of them there. Was that the same swarm that was in No. 1, or was it another one? If it is the same swarm, how can I get rid of them?

2. Last spring I had a queenless colony. I gave it a frame of brood and it reared a queen. They do not have very much brood in each frame and sometimes two eggs in one cell. What is the reason for her doing this?

3. On page 84, February number, there is a photograph of Mr. Bocock and the editor. which is the editor? I am a new subscriber and haven't a picture of him alone.

ILLINOIS.

ANSWERS—1. It is quite possible that the same colony of ants shifted from one hive to the other. It is said that sprinkling borax over the cloth will drive the ants away. A better way is to dispense with the cloth and have a one-fourth-inch space between the topbars and cover. That will allow no hiding place for the ants to be where bees cannot get at them.

2. Putting more than one egg in a cell may be a bad habit of a rather poor queen. It may also happen with a very good queen when the force of bees is so small that the queen is restricted in her territory.

3. Listen to their talk for a minute and you can easily tell which is which. The editor talks with a French accent, Mr. Bocock with an English one. The Frenchman is at the left.

Preventing Afterswarms

I had a swarm come out today from a colony with a clipped queen. I immediately began looking for the queen in front of the hive, but could not find her. The bees did not cluster, but circled around about five minutes and returned, clustering a little on the outside but going in about as fast as they came out. In about ten minutes, when most of them were in, I opened the hives and found the queen on a frame. I took this frame, with all bees and queen and put it in a new hive with frames and full sheets of foundation; moved the old hive away and put new hive in its place. I took each frame from the old and shook the bees in front of the new. This shaking took about three-fourths of the bees from the old to the new hives. I then put the old hive on a new stand about five rods away. I am anxious to know if I did right, or if there is a better (easier) way under like circumstances. Treated in this way am I likely to have afterswarms? OHIO.

ANSWER—Your management was good with one exception. You say you shook the bees from the combs. That would greatly endanger the queen-cells on the combs. You should have brushed the bees from the combs. You may or may not have afterswarms, depending on the strength of the mother colony and perhaps, also, on weather and harvest. A little different management would make for safety against afterswarms. Instead of setting the old hive five rods away, set it close beside the swarm, almost touching. Then, a week later, move the old hive to a new stand. The field bees would leave the old hive and join the swarm, so weakening the old colony that there would be no afterswarm.

Drones From Virgins—In Swarms

1. Are the sons of virgin queens perfect drones and able to mate? If so, can they transmit to the next generation the same vigor as if they were themselves the sons of mated queens?

2. While it is, I believe, exceptional for drones to be found in "first swarms," do they accompany "second" or succeeding swarms, which, of course, are headed by virgin queens? SCOTLAND.

ANSWERS—1. I know of no reason why the eggs of a virgin queen that lays should be in any way different from the unimpregnated eggs of the same queen if she had mated. And yet I have a feeling that drones from a virgin are not up to the mark, perhaps because there may be some doubt about the vigor of a queen that fails to mate. Such queens generally do not lay at all, but turn up missing.

2. Is it exceptional to find drones in "first swarms?" At any rate it's quite the thing to find them in afterswarms.

Dzierzon Theory

1. I am sending you, under separate cover, a sample of bees which I would like to know the kind. I found them working on red clover.

2. In the July American Bee Journal I saw where French bee journals condemn the discoveries of Langstroth and other men. Which is it, does the queen lay all the same kind of eggs, or does she lay some worker and some drone eggs? ILLINOIS.

ANSWERS—1. I'm not an entomologist, but feel safe in saying that the insects are flies; the particular kind I don't know.

2. Don't you mean Dzierzon instead of Langstroth? At any rate, the Dzierzon theory is still generally accepted, which is that all the eggs in the ovaries of the queen are of the same kind, those that are fertilized in the act of laying producing workers or queens, and those that remain unfertilized producing drones.

Bees Dying

I sent south and got some bees this spring (Italians). What ails them? The ground is strewn with bees crawling away from the hives. You can see lots of them ten to twelve rods away. There doesn't seem to be any shiny bees as you usually see when bees have paralysis; they seem to be all right, only they can't fly. MINNESOTA.

ANSWER—Paralysis is the only thing I can think of, but it may be something else. If it continues there will be no harm in trying the cure advocated by Mr. LeStourgeon—feed them some fresh, pure food.

Uniting

1. I tried uniting two colonies on a standard eight-frame hive and the other in a common box with seven frames. I took the box with seven frames and put it on top of the standard hive, without the floor. I put two sheets of newspaper between. Is the method all right?

2. What should I do with the seven frames that are in the box on top?

3. I have ten hives now, but do not want over five or six. Could I do the same with the extra hive as I did with No. 1? If I do, what time of the year is best? Sweet clover is just started blooming now, the main crop for bees here. COLORADO.

ANSWERS—1. Yes, only I find it generally does as well to use only one thickness of newspaper.

2. If they are of the same size as your other frames, you can use them in any hive where they are needed; if they are of odd sizes, leave them where they are until the brood has hatched out with a queen-excluder between the two hives, and making sure that the queen is in the lower hive. Then when the brood is hatched out you can melt up the combs, unless you prefer to transfer them into frames of regular size.

3. Yes, you can unite in the same way, and a good time is near the close of the harvest.

Tested and Select Tested Queens

What is the difference between a tested and a select tested queen?

INDIANA.

ANSWER—As generally used, a tested queen means one that has been laying more than 3 weeks, and her worker progeny all show the three yellow bands that indicate pure Italian stock. A select tested queen is one that is supposed to be better than the average, but I don't know by what rule she is selected.

Swarms

1. Should a swarm with a young queen be hived on full sheets of foundation?
2. I have some bees that I let swarm twice this year. They are now filling the body of their hive. What can I do with them?
3. About how long after the last swarm should I find eggs in the old hive?

MICHIGAN.

ANSWERS—1. A swarm with a young queen is not so likely to build drone-comb as with an old queen; still, the danger of drone-comb with a young queen is enough to make it advisable to use full sheets of foundation.

2. Give them super room if they can do more than fill their brood-chamber.

3. Somewhere about ten days.

Excluder—Increasing

1. Would it be all right to put a 1-inch excluder on the front of the hives and leave it there during the swarming season, and not let the queens out to swarm?
2. How do you raise queens for your own use? I mean how could I?
3. I have some colonies with combs built crosswise; could I use these for increasing? Putting a queen in a new hive, moving the old hive and catching about a pound of bees and repeating in about two weeks again. I tried this on a colony this spring and they did fine.
4. What is a nucleus?
5. Which would be the best, to increase, buy a nucleus, or bees by the pound?
6. Would it be a good plan to have a 2-inch ventilator on both ends of the body of the hive close to the top that I could slip out in hot weather?

IOWA.

ANSWERS—You will find it unsatisfactory. The bees would swarm until the first virgin emerged and then they would swarm some more, and if you didn't give the young queen a chance to fly you would have a drone-layer.

2. You will find the plan I use for rearing queens given very fully in "Fifty Years Among the Bees." Also questions about queen-rearing answered in "Dr. Miller's Thousand Answers." The chief thing is to have queen-cells reared in a strong colony of queenless bees, from eggs laid by your best queen.

3. Yes, your plan will work. Some make a practice of keeping colonies in box-hives merely for the sake of rearing swarms; allowing the colony to swarm twice or more, then building up for the winter. But in the long run it is better to have bees in hives with movable combs, and in some States it is against the law to have any others.

4. A nucleus is merely a small colony. It may have only one comb, or it may have several, and the combs may be small or of full size.

5. Sometimes one is best; sometimes the other. If you can buy at or near home, a nucleus is probably better. If you send a long distance, buying bees by the pound is generally preferable.

6. Formerly that was used more than at present, yet it can hardly do any harm, and in very hot weather should be liked by the bees.

Feeding Diseased Honey

1. I have just transferred some bees from box-hives into standard dovetailed hives and have some three or four hundred pounds of old combs and honey left which I would like to feed back to them. This honey may be diseased, would extracting and heating it destroy any germs that it might contain? If so, to what temperature must it be heated?
2. When would you start feeding the honey?

MICHIGAN.

ANSWERS—1. Yes; add an equal quantity of water to the honey; boil it in a closed vessed, and see that it continues to boil vigorously for at least half an hour after it begins to boil. Then it is safe to feed to bees. It is safe food for humans without the boiling.

2. It should be fed at the same time you would feed any honey; if for winter use that will generally be after the fall flow is over, say some time in September.

Transferring—Requeening; Swarms—Sections—Danzenbaker Hive

1. When transferring by the "driving' method is it a good plan to set the old hive on top of the new one with a bee-escape between, or leading to the outside in front? If I put a honey-board between the old and new hives without a bee-escape will the bees all go back to the old hive? Of course, the new hive is filled with foundation.
2. What do you think of transferring by "driving" bees onto full sheets of foundation in June and July. Is this too late? Or would it be better to use only half sheets?
3. How would it do to take a two-story hive (with bees in it) and at the beginning of the honey-flow brush off the bees in a second story, and if brood is plentiful introduce a pure-bred queen and put on a new stand?
4. I have seven colonies which are in 10-frame Danzenbaker hives. How would it do to divide these in half and give each half a new queen (pure Italian preferred) some time in September? Or would it be better to requeen this fall and divide them next spring? My idea was to increase my colonies and at the same time get pure blooded queens when they are cheapest. Could I get pure bred queens this fall and keep them in small hives with a few bees until next spring?
5. What do you think of hiving swarms on half sheets of foundation, and as soon as the bees fasten it all around and begin building comb in lower part of frame, to reverse the frame, the idea being to keep them from building so much drone comb? Will this help?
6. How would it do to wrap each section in tissue paper to keep the bees from propolizing so much? Or would this make "bad matters" worse?
7. Should comb honey in the sections be worth more than same in shallow extracting frames? The latter to be sold as "chunk" honey?
8. Can you tell me why the Danzenbaker hive is not considered a good one in this part of the country?

ILLINOIS.

ANSWERS—1. Putting the old hive above, with the bee-escape under, is all right, only in some cases there may be a little danger that the brood in the old hive may not have quite so good care. If there be a queen-excluder between the two stories, and there is plenty of room in the old hive, the bees will mostly go above, but gradually they will work down where the queen is.

2. Full sheets are better, unless you want a lot of drones, and July in a good season is none too late.

3. It will do, only there is danger that many bees will return to the old stand. It will be better tto put an excluder between the stories a week before, keeping the queen in the lower story.

4. Better wait till next year than divide in September. But August may do, provided you feed if there is no late flow. Keeping a queen over winter in a weak colony may succeed, and it may fail. Better go slow and sure.

5. I don't believe it would work.

6. I hardly believe it would pay; but there's no law against trying it.

7. In most markets it would probably sell for more in sections.

8. I suppose it's the same in your section as in other sections, and I'm not sure as to the reasons, but likely because it is troublesome to handle the frames without killing bees, and with frames so shallow there is more danger of pollen in sections.

Putting Supers on Swarm-Starters

1. How long after a new swarm has been hived must we wait before we put the super on?
2. Is it absolutely necessary to put starters in the super to induce bees to go above to work?
3. Should bees go above before the brood-chamber or brood-frames are full?

INDIANA.

ANSWERS—1. Supers may be put on as soon as the swarm is hived, provided a queen-excluder is used to prevent the queen from going up into the super; otherwise you should wait two or three days for the queen to get a start in the brood-chamber.

2. It is better, but not absolutely necessary, for after the brood-chamber is well filled a strong colony may commence work in a box that is absolutely empty.

3 No, and they are not likely to do so.

Bees Won't Enter Super—Wiring Frames—Brood Combs Filled With Honey

1. Am having trouble getting my bees to go in the supers. I run for both comb and extracted honey. I use full sheets of foundation, both in frames and sections. What ought I to do?
2. In using either single wall or telescope hives which is the best to use under the cover, domestic or wax cloth with the enamel side outside? Some say the wax cloth causes the hive to sweat on the inside.
3. Which is the best way to fasten foundation-comb in wired extracting frames in the small groove at the bottom side of the top-bar, or doesn't it need to be fastened at all in the small groove where it is fastened to the wires?
4. My bees did not swarm this summer, and since the larva have all hatched out they have filled all of the brood-combs with honey. Why have they stored honey in the brood-combs so early in the season?

MISSOURI.

ANSWERS—1. Bait the bees up by putting into each extracting-super at least one frame of drawn-comb, and in the section-super at least one section (preferably in each center) that was filled or partly filled the previous year and then cleaned out by the bees. If you have nothing but foundation to put in super, put a brood-comb from the brood-chamber into the super until the bees begin work on the adjoining frames of foundation, and cut a piece out of a brood-comb to put in a section.

2. It doesn't matter very much which, but the bees are not so likely to gnaw the enameled cloth. The sweating doesn't cut any figure. Many, however use no cloth of any kind, preferring to have a wooden cover directly over the top-bars, with a beespace between.

3. Even if wired, it should be fastened at the top. Some prefer to fasten with the wedge that is furnished with the frame, and some prefer to fasten with melted wax and rosin, half and half.

4. It looks as if the storing instinct had run away with them. Extract some of the combs in the brood-chamber that contain no unsealed brood, and the bees may change their minds and start to brood-rearing again.

When to Handle Bees—A Weak Colony

1. Is there any time of the year that you don't dare handle bees? Have been told that if you handle them in July and August they will eat up all the honey they have.
2. What book would you advise me to get on bees? I am just a beginner in beekeeping and have the book "First Lessons in Beekeeping." Is it sufficient for a beginner?
3. I purchased two colonies of bees from Texas and also a two-frame nucleus this spring. One colony is not storing honey in the super; the other has been for about three weeks. What's wrong with the first colony?

NEBRASKA.

ANSWERS—1. As a general rule it is all right to handle bees any time when they are flying freely, provided there be any reason for handling them. No reason why they should not be handled in July and August as well as earlier or later.

2. You may do very well with the book you have, yet if you do a great deal with bees you will hardly be satisfied with one book. In your bee journal you find a number of books about bees that are all good.

3. Without knowing particulars it is hard to say why a colony does not work in supers when others do, but the likelihood is that it is because the colony is not strong enough.

Distance Swarms Go—Fastening Foundation Combs.

1. Why did some of my hives swarm before they got the super started?
2. How far do the bees go when they swarm for a new abode?
3. When the bees swarm and they alight on a bush, how far is the tree or their home from the place where they had clustered on the bush?
4. Where could I get some oil of sweet clover? It is used to hunt bees.
5. Will you give me a good method to fasten combs in frames?

PENNSYLVANIA.

Answers—1. Hard to say without particulars, but likely because there was nothing to bait them into the supers.

2. They may go three miles or more.

3. There is no rule about it, but they are not likely to cluster more than 10 or 15 rods from the hive they issued from.

4: I don't know. I never before heard of oil of sweet clover.

5. The foundation should be supported by wires or foundation-splints, and securely fastened to the top-bar. This may be done by means of the wedge that is sent with top-bars that have two saw-kerfs on the under side, the wedge being crowded clear in, and if the foundation is not thoroughly fastened without it an extra strip of foundation or else a thin strip of wood should be put in the kerf with the edge of the foundation before the wedge is driven in. If there is no wedge and groove, run along the joint melted wax and rosin.

Putting on Supers

When should I put supers on my bees? I hived two swarms today. When should I put supers on these two hives they swarmed from?

ILLINOIS.

Answer—You are in a white clover region, and should give supers as soon as you see the first white clover in bloom. When a colony swarms the supers should be shifted from the old colony to the swarm as soon as the queen has begun to work in the new hive, say in two or three days.

Home Queen Rearing Failures

1. I have been trying to raise some queens for the first time, both over queen-excluder and below, with poor success. I did not take brood away. Is that the cause of not getting cells accepted?
2. Have had several cells hatch out in nuclei and after the queen had laid a few eggs she disappeared and the bees would rear another from the eggs laid. Can you give cause?
3. Some queens hatched without wings, or the bees cut them off.
4. How long must cells be capped before caging them? I caged one lot and not a single one hatched.
5. Will eggs from an unfertile queen produce a queen?
6. Where foulbrood exists and shows up in only part of the brood-frames would it do any good to destroy only the affected frames?
7. On one section I had queen-cells over excluder and as one would hatch the bees would ball her. What was the cause?

ILLINOIS.

Answers—1. Hard to say without knowing all particulars. But if bees have unsealed brood at command they do not feel hopelessly queenless, and so not so much in need of queen-cells. But there may have been other reasons for your failure.

2. There may have been too little room for the queen.

3. Queens may be born with defective wings or legs, perhaps due to lack of sufficient heat or proper nourishment. Sometimes bees ball a young queen and gnaw her wings.

4. The shorter the time of caging before hatching the better. Generally one can manage to have virgins emerge within a day or two after caging, and yet I have known queens apparently good that were caged 4 or 5 days before hatching. In any case it is important that the caged cell be in the midst of a strong mass of bees, with no possible danger of being chilled.

5. No.

6. It might.

7. I don't know. Possibly the bees concluded, after all, that they didn't need another queen, even though to some extent isolated from the laying queen. Possibly your opening the hive and disturbing the bees may have caused the balling.

Prime Swarm on Old Stand

1. We have on hand quite a few supers containing empty sections filled with foundation. They were left over from 1915. We stored them in an out-building last winter, but snow drifted in and filled supers with dirt, fine particles still sticking to the foundation. They look quite black with dirt. Should we use them? Will the bees clean them?
2. We formerly practiced in a case of swarming, putting the young swarm on the old stand, and after seven days removing the old one to a new location. This season we left the two together. Now, in one case we find most all the bees are back in the old stand and the hive the young swarm occupies has but few bees, while the other is something remarkable; never saw anything like it. They now have four supers on, nearly all filled. Meantime the hive we put on the old stand containing the prime swarm has one super and has hardly done anything. Both hives are as close together as can be, facing due east.
3. What do you consider an extra heavy yield?

IOWA.

Answers—1. If it be only ordinary dust that has blown into the sections, I think the bees will clean them all right.

2. The two hives being so close together it is not so very strange that in some cases the bees should prefer the old hive; but if you had moved the old hive away in a week all the field bees would have been with the swarm. The strange thing in the case is that the bees did not swarm out with the first virgin that left her cell.

3. That would vary greatly with the locality, season and management. In some cases it might be 50 pounds, in others 500.

Swarms Uniting, Etc.

1 I had a swarm issue and as I did not care to have them swarm again I hived them on the present stand with the old swarm by its side. In one week I moved the old swarm to a new stand. The same day that I moved them a prime swarm issued from another hive, and in a few minutes an afterswarm issued from the hive I had just moved. I put them together in one hive. In about five hours they left the hive and clustered on the front of the hive that had sent out the afterswarm. I gave a super with sections and foundation. A part of them went in, but as there did not seem to be room for all, I gave another super. So far they seem to be all right. What caused them to act so? Did I do wrong by putting the two together?
2. Is it all right to put brood foundation in sections? I run out of super-foundation and used a little brood for starter.

MAINE.

Answers—1. A week after the prime swarm issued you moved the old hive to a new stand. Usually you would have expected no afterswarm, and the reason that one did issue was probably because the prime swarm had been delayed by bad weather so that it took only a

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week for the young queen to emerge. As to the uniting of the swarms, there was nothing very unusual, and a swarm a good many times will enter a hive where there is unusual excitement.

2. To use brood-foundation in sections is decidedly objectionable if the sections are to be sold and you expect to sell afterward.

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THREE-BANDED ITALIANS—One, 75c; 6, $4.00; 12, $7.50. Tested, 1, $1.00; 6, $5.70; 12, $10.75
Cotton Belt Apiaries, Box 83, Roxton, Tex.

FOR SALE—Bright Italian queens, 65c each; $6.50 per doz. Ready now; safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, La.

GOLDENS that are true to name. One race only. Unt., 75c each; 6, $4.25; 12, $8.00. For larger lots write for prices. Tested, $1.50. Sel. test., $2.00. Breeders, $5 and $10.
Garden City Apiaries, San Jose, Calif.

FINEST ITALIAN QUEENS from June 1 to Nov. 1, $1 each; 6 for $5. My circular gives good methods. Ask for one.
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HEAD your colonies with some of our vigorous young three-banded Italian queens. Untested, June 1, $1; per doz., $9; nuclei and full colonies. Satisfaction guaranteed.
A. E. Crandall & Son, Berlin, Conn.

FOR SALE—In their season, Italian queens, bees and honey. For prices on bees and queens send for circular, or see our large add. in May or June issue. H. G. Quirin,
Bellevue, Ohio.

GOLDEN ITALIAN QUEENS from a breeder that was 1st premium winner at Ill. State Fair in 1916. Untested, 75c; 6 for $4.25; 12 for $8. Select untested, 1, $1; 6, $5; 12, $9. Tested, $1.50; 6, $8.
A. O. Heinzel, Rt. 3, Lincoln, Ill.

QUEENS OF QUALITY—Our Hand-Moore strain of three-banded Italians are beautiful and good honey gatherers. Bred strictly for business. Untested, 75c; half doz., $4. Select, $1.00. W. A. Latshow Co., Clarion, Mich.

GOLDEN QUEENS that produce Golden wokers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1 each; tested, $2; breeders, $5 and $10.
2Atf J. B. Brockwell, Barnetts, Va.

GOOD ITALIAN QUEENS—Tested, $1; untested, 75c. One-pound packages with untested queens, $2.25; 2-lb. pacgage, 53.25. One-pound package with tested queen, $2.50; 2-lb. package, $3.50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4. With tested queen, 2-frame, $3.50; 3-frame, $4.25. We can please you. G. W. Moon,
1904 Uark Ave., Little Rock, Ark.

MY BRIGHT Italian Queens will be ready to ship after April 1 at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenvills, Ala.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1; 6, $5; tested, $3; breeders, $5 and $10.
C. W. Phelps & Son,
3 Wilcox St., Binghampton, N. Y.

I AM NOW prepared to supply you with Golden 3-banded and Carniolan queens. Give me a trial and be pleased. Tested, each, $1; 12 or more, 85c each. Untested, 75c each; 12 or more, 65c each. Ten per cent discount on orders booked 30 days before shipment. No credit; no c. o. d. shipments.
I. N. Bankston, Eagle Ford, Tex.

FOR SALE—100 colonies of bees in 10-frame hives, with or without location; frames are all wired and of Hoffman's size. Also 200 deep supers of drawn comb. Will sell cheap if taken at once. Reason for selling, got too much other business. Address, A Schmidt.
Two Rivers, R. No. 1, Wis.

FOR SALE—450 hives of bees, all well located in best alfalfa and sweet clover localities; also shop and fixtures in town. Address,
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FOR SALE—Small apiary, 25 colonies Italian bees in 8-frame hives; quantity of new hives, supers and accessories.
O. Flinch, Huntington, N. Y.

FOR SALE—Three-banded Italian queens from the best honey gathering strains obtainable. Untested queens, 75c; 6, $4.25; 12, $8 Tested queens, $1.50 each. Robt. B. Spicer,
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SWARTZ' GOLDEN QUEENS produce golden bees of the highest qualities. Satisfaction guaranteed. Mated, $1; 6 for $5. Tested, $2.
D. L. Swartz,
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HEAD YOUR COLONIES with our honey-getting strain of Italians. Price for September only 50c each.
Sinking Creek Apiaries, Gimlet, Ky.

TRY my very best Caucassian-Italian tested queens at $1 each. Hybrids at 25c each.
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GOLDEN ITALIAN QUEENS—No better honey gatherers anywhere at any price. Untested, $1.00. Tested, $2.00.
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WANTED—Very reasonably, 60 to 70 swarms, with accessories. J. Schick,
2318 Irving Park Blvd, Chicago.

WANTED—White and amber extracted honey in one to five thousand pound lots.
W. H. Hyde, New Canton, Ill.

UNTIL NOV. 1 we can supply queens from our superior strain of three-band Italians at these prices: Untested, 50c;, $6 per doz.; tested, $1 each. No disease. All queens guaranteed. J. W. K. Shaw & Co.,
Loreauville, La.

GOLDEN 3-BAND Italian and Carniolan queens. Virgin, 1, 60c; 6, $2.50; 12, $4; 100, $25. Untested, 1, 76c; 6, $4.20; 12, $7.80; 100, $60. Select untested, 1, 85c; 6, $4.80; 12, $9; 100, $70. Tested, 1, $1; 6, $5.40; 12, $10.20; 100, $80. Select tested, 1, $1.25; 12, $13.80; 100, $100. Breeders, $3 each. Bees in packages without combs: half-lb., 75c; 1-lb., $1.25; 2-lb., $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2.25; 3 frames, $4. All kinds of queens wanted. We guarantee safe arrival and no disease.
C. B. Bankston, Buffalo, Tex.

HONEY AND BEESWAX

WANTED—Carload or less lots white and darker extracted. State quantity, quality, packing and lowest price.
Hoffman & Hauck, Richmond Hill, N. Y.

RENDER your own combs and cappings without trouble or expense; make foundation for yourself and others easy. Address,
J. J. Angus, Grand Rapids, Mich.

WANTED—Light extracted honey of good flavor; white clover preferred. Kindly send sample and quote lowest price delivered at Richmond, N. Y. J. Stevenson,
Richmond, S. I., N. Y.

FOR SALE—Extracted white clover honey of finest quality, thoroughly ripened; rich and delicious. It is put up in new 60-lb. cans; price, $8.50 per can, f. o. b. here. Repeated orders from well satisfied customers year after year are proof of the quality and purity of this honey. Cash must accompany each order. Sample by mail, 10c. G. A. Barbisch,
R. 1, La Crescent, Minn.

WANTED—Car load or less lots White and buckwheat comb State quantity, grading, sections size and lowest price.
Hoffman & Hauck, Richmond Hill, N. Y.

FOR SALE—Raspberry, basswood, No. 1 white comb, $3 per case; fancy, $3.25; extra fancy, $3.50, 24 Dan. sections to case; extracted, 120-pound cases, 15c per pound.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Comb, extracted honey, and beeswax.
R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTER—Beeswax at all times in any quantity, for cash or in exchange for supplies.
Dadant & Sons, Hamilton, Ill.

WANTED—To buy, a quantity of dark and amber honey for baking purposes.
A. G. Woodman Co., Grand Rapids, Mich.

WANTED—White and light amber extracted honey in any quantity. White clover and raspberry preferred.
I. J. Stringham,
105 Park Place, N. Y.

COMB HONEY our specialty. Highest market prices obtained. Consignments of extracted honey also solicited.
Albert Hurt & Co., New Orleans, La.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
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HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
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WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
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American Bee Journal, Hamilton, Illinois

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Crop Reports and Market Conditions

In a majority of communities, the bulk of the crop is now either harvested or else on the hives, so that it is possible to give a summary of the proportion of a crop which we can count on for the 1917-18 markets.

Reports from the New England States indicate that the crop is about as large as last season, though a little later. The honey, mostly white clover, is of good body and flavor and should command best prices.

New York, New Jersey and Pennsylvania report the crop as very short. Most localities indicate only about 20% of last year, while in a few the estimate is from 30 to 50% of what it was a year ago.

In the Carolinas, the reverse is true, one county agent reporting 275% of last year's crop. We must remember that the crop there was a failure in 1916, so that the large increase can be attributed partly to this and partly to the pushing of beekeeping there by both the State and the Government Departments. As nearly all Carolina honey is consumed at home, the crop will have little effect on the general markets.

Florida and Georgia have considerable more honey than in 1916, probably 20% more, at least. In Alabama, Mississippi, Louisiana and other Southern States, however, there is only about 50% of normal and only fair prospects for the balance of the season.

Texas has probably the worst failure in its history. Practically all the big honey-producing area reports little or no honey. Many reports are that bees are starving, while only a few report from 10 to 20% of a crop. The one exception is Western Texas, where there seems to be from 50 to 80% of a crop.

Through the Middle West also, as a rule, white clover was a failure. No one outside of Michigan and Wisconsin reports anywhere near a full crop. Some of the average figures are as follows: Ohio, 30%; Illinois, Indiana and Missouri, 10 to 25%; Iowa, 20%; Kansas and Nebraska, 20%; Minnesota, 50%.

Many Wisconsin reporters give an average about up to last year. Many more give about 60% of 1916.

Michigan has probably not fared quite as well as Wisconsin, but may have better than half a crop.

Colorado, which earlier promised to have very much more honey than last year, now reports from many localities that the crop will be much shorter than last season. Some few reporters expect 25% more than last year. Taken as a whole, it is very doubtful if there will be more honey than in 1916, the average being probably 90% of last year.

One reporter from Montana says only 60% of last year, but most others expect about 25% more honey than was gotten in 1916. Idaho, like Colorado, had good prospects early, but indications are now that this State will do well to get 60 to 75% of what they are used to. New Mexico and Arizona are about up to normal.

In California the crop has been about 60 to 75% of normal in the large honey-producing sections. Some have reported less than this, and a very few, more.

Taken the country over, it is very doubtful if there will be half as much honey as was harvested last season, and undoubtedly not more than 60%, while it may run as low as 40% of 1916.

Honey Offers and Prices

Big honey buyers are being forced to offer higher prices to get what honey they want. Blanket offers now tend to the minimum of 10 cents for almost any kind of extracted honey, while one of the largest buyers is offering 12 and 12½ cents for white honey in Michigan. One large producer in California reports the sale of some 24 tons at 13 cents for the white and 10½ cents for amber f. o. b. his shipping point.

New York producers are being offered around 10 cents for best white extracted, which is way below what they can get if they seek the right markets.

It is true that a large proportion of the honey for this year has been contracted for ahead of time and at much lower prices. It is also true that the general markets are much short of their usual supply. This is due to a combination of causes: short crop, heavy buying of bottlers for home trade, and heavy foreign purchases.

One association in the west has been holding the crop of its members for 13 cents f. o. b. shipping point. Another and larger one is asking 15 cents for white extracted. Indications are that they will realize this.

It is hard to determine just where the prices will go, but with the short crop and the mad scramble among buyers to get hold of the honey as fast as it comes from the hives, honey prices should easily reach a level of 15 cents for white extracted.

The local beekeeper who wants to buy outside honey to supply his regular trade will have to figure on putting his prices so that he can afford to pay at least 15 cents for his honey, and he may have to pay even more than this before the winter is over.

Comb honey, naturally, will be higher in price than at any time in the last few years. Many sales have already been reported at $4.00 a case, and the likelihood is that this will be exceeded.

HONEY AND BEESWAX

New York, August 17.—As to comb honey, nothing definite can be said at this date. From reports we have been receiving, it appears that a fair crop has been produced in York State, but no prices have been established that we know of, and therefore, cannot make any quotations until the next issue. The same applies to extracted honey, and no prices seem to be established. Southern honey seems to be pretty well cleaned up, and shipments now are mostly in small lots, many grades selling at from 10c to 11c per pound. The second quality, suh as light amber, is selling at around 8c to 9c, while very dark honey of rank flavor is not selling for more than 6c to 7c.

Beeswax is declining rapidly, and at present is not selling for more than 38c to 40c for choice yellow stock; darker for less.

Hildreth & Segelken.

Chicago, August 17.—Several small consignemnts of honey are appearing on the market.

The price of white comb that grades from No. 1 to fancy is 20c per lb. No ambers so far offered. Extracted white of good flavor and body brings 14c per pound in the 60-lb. cans. Barrels bring about 1c per lb. less.

Beeswax is ranging from 35c to 38c per lb.

R. A. Burnett & Co.

Chicago, August 16.—In regard to the honey market, it is just opening up. We had about 100 cases of small lots, just in, which sold from 18 to 20c per pound, and the market is quotable at these prices. In extract honey the market is from 14 to 14½c. Beeswax from 35 to 37 c for the best grades. We look for high prices to prevail on honey the entire season. We sold about 8 carloads last year and expect to handle 10 cars this year.

Coyne Brothers.

San Antonio, August 15.—Very little honey is in the Texas markets. The only carload offerings this year were from the alfalfa belt in the extreme western portion of the State. Prices in local lots bave ranged (wholesale) from 10 to 12c for extracted. Very little or no bulk comb has been offered. Cotton surplus will not appear until September and prospects are not very flattering for more than 60% of a normal crop.

Beeswax prices are 30c and 32c trade basis, with very little offered and a feeling of stiffness in anticipation of higher prices.

Southwestern Bee Company.

Kansas City, August 15—The honey market is improving. 24-section comb honey is selling at from $4.25 to $4.50, according to the quality.

There is very little extracted on the market, and trade is holding for 15c per pound for clear and 14c for amber.

There is a good demand for beeswax at 40c per pound.

C. C. Clemons Produce Co.

Denver, August 17.—We are at present selling new honey *to retailers* at the following prices: No. 1 white comb honey, per case of 24 sections, $4.50; No. 2, at $4.00.

Extracted white, according to quantity, 16 to 18c.

We are buying beeswax at all times and are at present paying 34c cash and 36c in trade for clean yellow wax delivered here.

The Colo. Honey Producers Ass'n.
F. Rauchfuss, *Mgr.*

FRICTION TOP CANS *and* PAILS

We can now furnish Friction Top Cans and Pails at the following prices, f. o. b. Chicago; Keokuk, Iowa; or Hamilton, Illinois---

2-lb- Cans in crates of 612, per crate	$26.75
2½-lb. Cans in crates of 450, per crate	22.50
2½-lb. Cans in cases of 12, per case	1.40
5-lb. Pails in crates of 200, per crate	16.00
5-lb. Pails in crates of 100, per crate	8.25
5-lb. Pails in cases of 12, per case	1.20
10-lb. Pails in crates of 100, per crate	12.50
10-lb. Pails in cases of 6, per case	.95

The above prices are low, considering the present prices of tin plate. Send in your orders at once.

DADANT & SONS, Hamilton, Ill.

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What was it this year? Did your bees swarm too much? Has your honey soured? Are your drones black, and why? Are you troubled with foulbrood? Wouldn't the bees work in the supers? Do you want to raise queens for your own use?

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May save you many pounds of honey, many wrong steps. It would be worth dollars to you. Yet here you have a thousand of these questions answered in that latest of bee books

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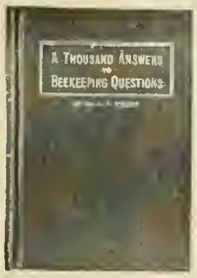

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Untested	50c each	$45 per 100	Tested	$1.00 each,	$ 90 per 100
Select untested	65c "	50 per 100	Select tested	1 25 "	110 per 100

We guarantee safe arrival of all Queens—that they are very resistant to European Foulbrood, and, in fact, will give complete satisfaction. Wings clipped free of charge. Our capacity is 1500 Queens monthly

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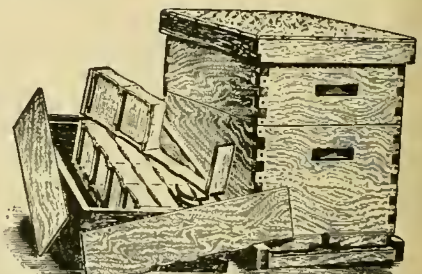

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Select untested, $1.25; 6, $6.00; 12, $11 00

Safe arrival and satisfaction guaranteed. Circular free.

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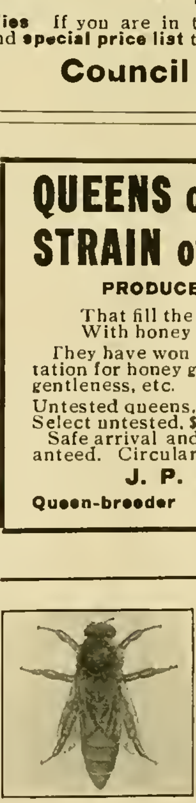

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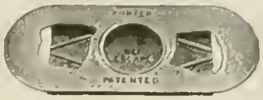

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Untested queens, 75c each, 6 for $4.25; doz., $8.00; select tested, $1.25.
Package bees, $1.25 per lb. Including untested queen, $2.00 per lb. Order early.
My package is light. Saves you bees and express. Prompt shipment; safe arrival and perfect satisfaction guaranteed. No disease.

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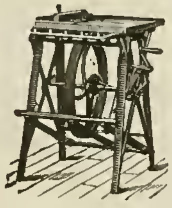

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A Wartime Appeal

To American Beekeepers

THE PRESENT CRISIS INTO WHICH OUR COUNTRY HAS BEEN FORCED IS A SUPREME TEST OF THE USEFULNESS OF YOUR INDUSTRY AND IS THE GREATEST OPPORTUNITY BEEKEEPING HAS EVER HAD TO SHOW ITS VALUE TO THE NATION. THE ANNUAL PRODUCTION OF THREE HUNDRED MILLION POUNDS OF HONEY MUST BE INCREASED AT ONCE BY AT LEAST ONE HUNDRED MILLION POUNDS TO FILL THE DEMAND AND TO FIVE TIMES AS MUCH AS SOON AS FACILITIES ARE AVAILABLE.

Every pound of honey produced will release its equivalent of butter or sugar for other purposes of food.

On account of the prospective shortage of sugar a large production of honey is imperative.

Push your production to the utmost, giving preference in times such as this to extracted honey, because in that way the total honey supply may be more greatly increased. Remember that two comb honey supers may easily be converted into a deep extracting super or a hive body.

Affiliate with your state beekeepers' association and with your local beekeepers' association if you have one. Field meetings should be encouraged early in summer to give practical information on manipulation, etc.

Order your bee supplies early and order standard goods in order to save time and enable manufacturing plants to accomplish the most in the shortest possible time.

Be sure that you are provided with a liberal quantity of containers at the outset in order that the present seeming shortage in tin and glassware may not prevent the sale of your honey when it is ready for market.

Sell all or as much of your honey as possible on your home market. It will bring greater profit to yourself commensurate with the cost of production and retail handling. It will help relieve freight congestion and will offer opportunity for the beekeeper who cannot sell at home to get a living price for his product. At present over ninety per cent of the honey crop is sold on the home market.

If you sell honey at wholesale, do not sell until you have full information concerning the needs of wholesale markets. Such information is furnished by the Office of Markets of the Department of Agriculture at Washington, D. C., to the bee journals and to individual beekeepers. The beekeeper will readily see the folly of dumping his honey without knowledge of the markets, as this demoralizes the market, with profit only to the speculator.

REMEMBER, IN HARMONY WITH THE GENERAL CALL MADE BY THE PRESIDENT, ALL BEEKEEPERS NOW OWE IT TO THE NATION, IN ORDER THAT BEEKEEPING MAY FULFILL ITS HIGHEST OBLIGATION, TO REDOUBLE THEIR EFFORTS TO INCREASE THE IMPORTANCE OF BEEKEEPING AS AN AGRICULTURAL INDUSTRY WHICH CONSERVES A VALUABLE NATIONAL RESOURCE AND WHICH PRODUCES A NON-PERISHABLE, CONCENTRATED, WHOLESOME FOOD WHICH PLAYS A VERY IMPORTANT PART IN THE ENDURANCE OF ANY NATION.

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AMERICAN BEE JOURNAL

OCTOBER, 1917

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REMEMBER We remit the same day your shipment arrives. Read the letter above and be convinced that this is the house to send your shipments to. Try us.

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Price on 1 to 10 Queens, 60 cts. each
" 11 to 25 Queens, 55 cts. each
" 26 to 100 Queens, 50 cts. each
" 100 to 1000 Queens, 48 cts. each

Safe delivery. If not satisfied, return Queens and get your money back. The Root Company, The American Bee Journal, Dadant & Sons, any mercantile agency, and others will tell you who we are.

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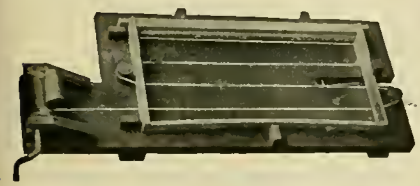

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25c Sends a big package of tobacco **$1** Keeps a Soldier happy for a month

Help us to send little packages of happiness to our "Sammies" in the trenches and our "Jackies" with the fleet. They are risking their lives for our sakes. Do what you can to make them comfortable—they crave and need tobacco. Every cent contributed goes for tobacco.

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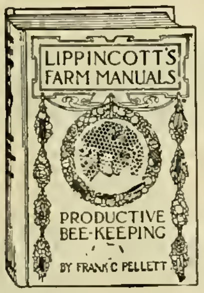
Endorsed by War and Navy Depts.

Productive Beekeeping

By FRANK C. PELLETT



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AMERICAN BEE JOURNAL
Hamilton, Illinois

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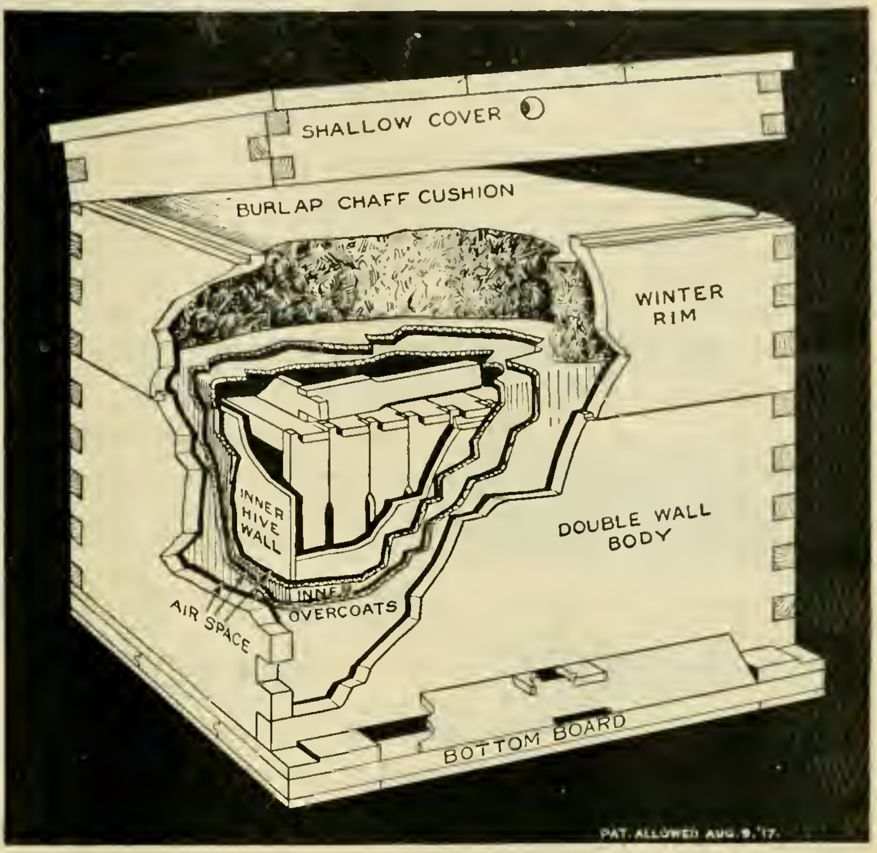
New Protection Hive



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Our three-year contract is enabling us to make prices considerably under general market quotations. Let us hear from you, specifying your wants.

Friction Top Tins

	2-lb. Cans	2½-lb. Cans	3-lb. Cans	5-lb. Pails	10-lb. Pails
Cases holding	24	24	---	12	6
Crates holding	---	---	---	50	50
Crates holding	100	---	100	100	100
Crates holding	603	450	---	203	113

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Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

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HONEY WANTED HONEY

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45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested.........	$1.50	$ 7.50	$13 50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	9.00	$ .75	$ 4.00	$ .75
Select Untested..	2.00	8.50	15.00	1.50	7.50	13.50	1 25	6.50	12.00	1.00	5.00	9 00
Tested............	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested....	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1.50; 2 fr., $2.15; 3 fr., $2.75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year

Select queen tested for breeding, $5.00

The very best queen tested for breeding, $10.00

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AMERICAN BEE JOURNAL, Hamilton, Ill.

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I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—Prices of Queens—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.60	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3 00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Select queen tested for breeding, $5.00. - **The very best queen tested for breeding, $10.00**

BEN G. DAVIS, Spring Hill, Tennessee

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makes many sales. A large amount of first sales today are made on the appearance of the object desired. The public wants something attractive. In attaining this appearance for your product, the container you use and its labels are of prime importance. Our booklet of

HONEY LABELS

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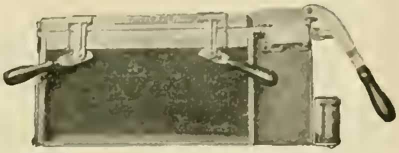
IT IS FREE.

American Bee Journal, Hamilton, Illinois



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Complete directions for operating are furnished with each device.

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Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

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Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 10 HAMILTON, ILL., OCTOBER, 1917 MONTHLY, 1.00 A YEAR

THE SWEET CLOVER BELT OF THE SOUTH

Beekeeping in Alabama and Mississippi as Seen by Our Staff Correspondent on His Recent Trip

THE sweet clover belt extends almost across the State of Alabama, east and west, but does not quite reach the Georgia line. Mr. J. E. Marchant is located at Columbus, Ga., across the Chattahoochee river from Alabama, but gets no honey from sweet clover. Union Springs, about fifty miles west, is on the edge of the sweet clover section.

In the last issue I told something of the lack of summer pollen on the Appalachicola river in Florida. The Chattahoochee river flows into this stream, or rather changes its name at the juncture with the Flint river, at the southwestern corner of the State of Georgia.

Mr. Marchant finds it easy and profitable to move about two hundred colonies by boat, to the tupelo region of Florida. At a cost of twenty cents per colony each way he is able to have the bees delivered and, in a favorable season, harvest a profitable crop and return the last of May, in time for the regular flows of his Georgia location. At Columbus his first honey comes from sweet gum. He also has tulip poplar, black gum and gallberry. In the fall he gets some honey from bitterweed and aster.

From near Union Springs the sweet clover belt extends west into the State of Mississippi and northward almost to the Tennessee line. Although most of the localities mentioned in this article are already well stocked with bees, there are many unoccupied ranges in this section of Alabama. At Fitzpatrick, Mr. Achord has nine hundred colonies in eleven yards. While he is in a position to harvest good crops of honey he prefers to convert most of it into bees and queens for the northern trade. He reports sweet clover as yielding generally from about June 5 to August 20. He also gets some white clover, but there are few reports of this bloom amounting to much so far south. Through this section rattan is frequently referred to as a source of nectar. Tulip poplar, black gum, hawthorne, field peas, privet and dwarf linden about complete the list of important honey plants. There is little aster in this section, as far as could be ascertained.

Through the sweet clover belt I found the average number of colonies in a single apiary much larger than in other parts of the south. They have generally the same honey sources, aside from the sweet clover, while this plant adds a tremendous advantage. M. C. Berry, of Hayneville, has 170 colonies in his largest yard. He runs several yards for honey in addition to his queen and package business. In another of these honey yards he has 140 colonies.

N. AND A. I. FOREHAND, SONS OF W. J. FOREHAND.

The section about Montgomery is the finest appearing country that I saw in Alabama, as there are many nicely improved farms and dairies there. There are few sections where white people live in the country to any extent. In most of the southeastern States the white people live in the towns, while the colored population tills the soil.

Mr. Berry gets a good start from redbud in early spring. This honey is consumed for brood rearing. He also gets a little white clover, some poplar, locust, black gum, etc. There is little surplus from cotton in this section. Sweet clover is the principal source of surplus.

As one goes further west and north he finds a constantly increasing number of colonies in a single yard. Near the west line of the State as many as 200 to 500 colonies are kept in single apiaries, with apparently dependable flows. In addition to sources already mentioned one hears of lespedeza, black medic, Cherokee rose, China-berry, rattle-weed, etc. At Ft. Deposit, which is some distance south of Montgomery, the Forehand apiaries are located in a China-berry grove, which is very attractive.

It seems unwise to mention the specific locations where I found the best reports, since so many beekeepers are inclined to rush into a good location which is already occupied, rather than look up an unoccupied one for themselves. This results in injury to the man already located, and frequently in disappointment to the newcomer. I found reports of many very good locations along the line between Mississippi and Alabama for a hundred miles north of Meriden. The possibilities of a location vary materially, depending upon the quantity of sweet clover. There are large areas where sweet clover has become established over thousands of acres of unused land. This, of course, makes an ideal condition for the beekeeper.

I found one apparently well authenticated record of an average of one hundred pounds per colony for ten years, with as high as seven hundred colonies in one apiary. I hesitated to record it here, but my information came from a well-known man of wide experience in honey production. I found no other location supporting so many colonies and giving such a yield. Not far away, good beekeepers are keeping from 160 to 200 colonies in one yard. The man who is interested should depend upon his own examination to pick out a specific location.

At Corinth, Miss., I visited Mr. J. L. Leath, a well-known queen breeder whose name is familiar to many of our readers. Corinth seems to be out of the best sweet clover territory, although both white and sweet clover yield honey abundantly. Being in the extreme northern part of the State, many plants common to the northern States are found. Mr. Leath reports that his early honey comes from the willow, elm, maple and fruit bloom, sources which are familiar to northern beekeepers. He also gets some dark honey from persimmon. White and sweet clover furnish his principal crop, with bitterweed, asters and goldenrods in the fall. Cotton does not help appreciably in his section.

ONE OF M. C. BERRY'S ALABAMA OUTYARDS.

From Corinth I went to Memphis, Tenn., which seems to be out of the sweet clover district. Mr. W. E. Drane, who has bees on both sides of the river, in Tennessee and Arkansas, advised me that his honey comes from white clover, holly, tupelo, black gum, redbud, locust, tulip poplar, blackberry, asters and heartsease. He reports no goldenrod and little honey from cotton.

ONE OF ACHORD'S QUEEN YARDS.

Finding a Location in the South.

The northern beekeeper who dreams of finding an ideal location in the south should spend some time there before tearing up stakes and moving his family. In general, southern locations are not equal to those of the north, while social conditions are so different that one should become somewhat familiar with the south before making a change. The southern people are very agreeable, but customs are radically different and one must not expect to find things as he knows them in the north. There are places in the south where northern families might locate with entire satisfaction, while in other neighborhoods the northerner would surely be dissatisfied. The best plan for one contemplating such a change is to spend his winters in the south, becoming familiar with the conditions and customs until he feels sure that he is prepared to adjust himself to them. The northern man who goes south, expecting to show those who have lived there for years a better way of doing things, is not likely to succeed very far. The southern people have problems different from ours, and they know better how to approach local conditions than a stranger does.

The negro population is much greater than the white, in most localities in the States mentioned. Few northern men are content to live among the blacks.

There are some extensive beekeepers in the north who might find it to their advantage to have apiaries south, as does Mr. Stringham of New York. Bees are very cheap in many southern localities, and one could establish an apiary there without great cost, except for hives and equipment. By spending the winter there, getting them ready to ship north, in packages, in spring, one could prepare for making such increase as needed in his northern apiaries, while enjoying the milder climate during the cold months.

The Color of Honey From Goldenrod and Aster

By C. C. Miller.

NOT long ago I received by parcel post a section of honey. It was done up in a small armful of excelsior, by which I knew it was from Allen Latham without reading the name on it, for Allen Latham is the man who knows how to ship section honey by mail. I waited some days for a letter saying why he had sent the honey, and receiving none I wrote gently abusing him for setting me to guessing. He replied as follows:

"Dear Doctor Miller:

"That section of honey was handed over to me by the bees without any Encyclopedia Brittanica article about it. I wanted to give you a chance to crack the nut without any suggestions. But it was not fair, I'll admit.

I had the entire super; you had not.

"How many years have I argued that goldenrod honey was white? I have been disputed many times. I knew it to be as white, nearly, if not quite, as white clover honey. But all others, for the most part, said it was not white, but anywhere from a light amber to dark. They told me that what I called goldenrod honey was aster honey.

"Now you come along in one of your 'Answers' and say that aster honey is dark.

"Where is a poor man to put up at, anyway?

"As usual, I shall have to put up at this statement: I am right; you are all wrong.

"Last season was peculiar here. Sumac, my old reliable, failed. White clover, the fickle, gave a crop. Then along in August two of my apiaries got in touch with an alsike field. How the honey rolled in for a few days, till the field was hayed! Strong colonies filled two supers and started a third. No more honey came till goldenrod began to bloom. The bloom was very profuse and the bees deserted everything for goldenrod. I have not seen such a flow for some fifteen years. Well, sir, those strong colonies that had started the third super of alsike finished it with goldenrod. If you have eaten that section of honey you doubtless got the flavor of the goldenrod near the sides and bottom, and the clover from the middle.

"I have many sections and some much better illustrations, showing plainly where the two varieties of honey ended and left off in the cappings, there being a distinct ridge or line between the two. I had saved three such to send away, but a thief broke in and ran off with those very sections, confound him. Now mark, I could tell where one began and the other left off by the comb, but not by the color of the honey. Only by tasting could I tell the difference in the honeys.

"I have often explained why so many people think goldenrod honey is dark. It is simply because a little dark honey will color a lot of white honey. A lot of white honey will not whiten even a little dark honey. Few people have ever obtained the goldenrod honey in its purity. It is more often dark with me than pure white. The same is true of apple-blossom honey. This honey is not quite as light as clover, being a more decided straw color. But it is not at all dark, not even amber. Only last night I was taking supper with a friend. He said he had got a few sections of apple-blossom honey and brought on two of them. It was delicious. I had not seen a section for fifteen years. It was very light in the center of the section, where the honey had come in pure, but the outer portions were amber, being tainted with huckleberry honey.

"Give my love to the ladies and grant forgiveness for trying your good patience. I appreciate your trials in the question box.

"Aster honey is as colorless as water, and when candied, and it will candy before you can get it to run through fine cheese cloth, the result is as white as the driven snow. Now will you be good?

"Most sincerely,
"ALLEN LATHAM."

Now, what am I to do? People ask me all sorts of questions about things of which I have no personal knowledge, and parrot-like I repeat what other people say. For instance, aster and goldenrod honey. Plenty of aster and goldenrod here, but seldom a bee seen on them. Just flies and wasps. How do I know what the honey is like? Everybody—well everybody but Allen Latham—says the honey is dark. How am I to tell? Possibly it may turn out that some localities have it light and some dark. I think heartsease honey is generally rather dark, yet I'm pretty sure I've seen it as light as clover.

The section in question, so far as looks are concerned, would readily pass for white clover. More than that, the flavor is good. I'm glad if friend Latham gets a whole lot of it.

QUEEN YARD OF J. L. LEATH, CORINTH, MISS.

Like enough Mr. Latham has struck the explanation when he says a little dark honey colors a lot of light. A spoonful of ink will darken very perceptibly a cup of water, while a spoonful of water will not perceptibly change the color of a cup of ink. —C. C. M.

(May the Editor put in a word, too? We do not know of our own knowledge of the color of goldenrod honey, for the bees very rarely work upon it in this locality. But aster honey is very white here. We know, for we have had barrels of it harvested by the bees when there was nothing else to be had.

Perhaps, probably, there is a difference in the color of honey from similar bloom in different places, especially when they are as far apart as Illinois and Connecticut.—Editor.)

J. E. MARCHANT'S QUEEN-REARING APIARY

AMERICAN
ESTABLISHED IN 1861
OLDEST BEE PAPER IN AMERICA
BEE JOURNAL

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IMPORTANT NOTICE

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THE EDITOR'S VIEWPOINT

Morley Pettit Resigns

Mr. Morley Pettit, of the Ontario Agricultural College, has resigned as Provincial Apiarist, and after November 1, 1917, will devote his attention to the Pettit apiaries, with headquarters at Georgetown, Ont.

The system of teaching of beekeeping, as well as the active advancement of beekeeping in Ontario can be traced largely to the thoroughness and personal application of Mr. Pettit since he was appointed there.

A close student and a practical beekeeper as well, Mr. Pettit has instituted a system in Ontario which has been the working model for many State institutions in this country. We wish him well in his private endeavors.

No announcement has been made as yet as to who will be chosen to fill the vacancy left in the department by Mr. Pettit.

New Honey Plant From China

When our staff correspondent visited Washington last winter he learned of some new plant introductions which looked promising for the beekeeper. Arrangements were made for trial of these plants at his garden in Iowa. Because of nematodes the Bureau of Plant Industry decided not to send out any specimens of some which it had been expected would be given a trial.

About fifty specimens of Vitex negundo incisa reached Atlantic in time for planting last spring. These were at that time mere switches about a foot high, but they have made a fine growth the past season and have bloomed profusely considering their small size.

The plant was found at Shantung, China, by Mr. Frank N. Meyer, an explorer for the Department of Agriculture. He describes it as follows:

"A sage which may prove to be a good plant for the arid southwestern States. It is able to resist alkali remarkably well. The Chinese use it for basketry manufacture, taking the annual shoots for this purpose. It has pretty blue flowers and is diligently visited by all kinds of bees, and as such it might be grown in gardens as a semi-ornamental shrub and as a honey plant. It grows when left alone, up to 20 feet tall."

The thing that makes it of special value to the beekeeper is its long period of bloom at a time when (in Iowa) there is little nectar to be had. It began blooming the last week in July and the last blooms have not entirely faded on the 10th of September. Generally grown as an ornamental in cities and towns, cemeteries, etc., it should add materially to the bee pasturage of the localities. As yet it is uncertain whether it is sufficiently hardy for the Iowa winters, but beekeepers in the southwest can try it with confidence. We are informed that the Bureau of Plant Industry at Washington has a limited number of plants ready for distribution, which will be sent free to beekeepers who will give some care to testing and reporting the value of the new introduction.

Bindweed for Honey

On page 380 of the November, 1915, issue of this Journal, reference is made to the fact that a member of our staff had received a specimen of black bindweed, Polygonum convolvulus, with the statement that the bees were working on it. In leaf and vine the plant is very similar to morning glory, but the blossom is very small and the seed somewhat resembles buckwheat. At that time we could find no record of the bindweed as a honey-plant and asked for notes from any of our readers who had observed the bees on it.

Although this reference has been borne in mind since that time, not until recently have the bees been observed working on this plant. In our plant garden in Iowa there is a liberal amount of this species, and for a time, in early September, the bees worked on it eagerly. So many bees were working on the plant that it seemed evident that under certain conditions it might be valuable.

We will be glad to hear from any observer who has noted similar conditions, as we are anxious to learn more about the value of this plant. In this connection we are always glad to receive specimens of any unusual plant on which the bees are observed to work freely.

Change in Supply Firms

We have just received news that the majority of the stock in the bee supply firm of Kretchmer Manufacturing Company at Council Bluffs, Ia., has been acquired by Mr. J. T. Calvert, of the A. I. Root Company.

Mr. E. Kretchmer, the president of the former concern and one of America's oldest keekeepers, has disposed of practically all his holdings and expects to retire from active business life. He has been a sterling friend of beekeepers throughout his career.

Just what the Root Company propose to do with their new plant we are not informed, whether it will be run under its present incorporated name or merged into the larger company as one of its branches.

Advance in Cost of Supplies

Recent quotations from supply dealers show an advance in prices on bee supplies ranging from 20 to 40 per cent over those in effect during the present year.

The advance has been greatest in all articles of metal, since the metal has been extremely hard to get and the price is abnormally high.

Raw lumber has also advanced in some instances as much as 50 per cent.

We would urge beekeepers to anticipate their needs as much in advance as possible and buy early. Early order discounts apply in the fall and early winter. Stocking early will insure relatively quick deliveries and will enable the beekeeper to assemble his hives and other goods during the fairly slack time in the winter.

Winter Losses in British Columbia

The article by Mr. Sheppard on this subject is of value to all beekeepers of northern countries, for it describes conditions which may prevail as well in the United States as in the Provinces of Canada. We learn one additional fact about honeydew, the light color of that which is produced on the birch. We thought all honeydew was dark in color. Nearly every sample we have seen was produced on the oak and the hickory.

Rev. Francis Jager in Europe

Professor F. Jager, instructor in beekeeping at the University of Minnesota, has left for Salonika, to serve with the Red Cross. Professor Jager is a Slav by birth and is in full sympathy with the Allies, although he is, or was, an Austrian subject. The Central States have gained nothing by tyranny over the small Balkan races.

Men like Professor Jager, who is also a Catholic priest, and of very extensive education, are a credit to the cause which they support.

Professor Jager is president of the National Beekeepers' Association and is very desirous that it should not suffer by his absence at the front. He has therefore written to a number of leading beekeepers to ask them to do all they can for a successful meeting the coming winter.

Large Brood-Chambers

Large brood-chambers have been used and recommended for years by the Dadants. But the large hives are expensive and they have been opposed by many.

The September number of Gleanings in Bee Culture contains two valuable testimonials on this subject. On page 678, Mr. Byer, the extensive Canadian beekeeper, writes:

"Answering the question as to what hive I would use if starting all over, I can say that my preference is for the 10 or 12-frame Jumbo size."

The Jumbo hive is the Dadant-Quinby hive with top bars of Langstroth length. The 10-frame hive of that kind contains as many square inches of breeding surface as the 12-frame Langstroth size.

On page 689 of the same magazine the Jumbo hive is described as the "ideal hive for southern beekeeping" and on page 690 Mr. L. E. Webb writes: "The Jumbo colonies peg along with their tremendous force of workers throughout the season, asking only for super room, requiring no fussing other than to keep them with good queens."

There you are. The large hive is thus presented as best for the far north and for the far south. We can testify to its being best for a country which is between those two extremes.

Obituary

We are sorry to announce the death of Mr. Geo. L. Cary, president of the Adirondack Beekeepers' Association, whom we mentioned on page 51 of the February number, in the series "Among Eastern Beekeepers." Mr. Cary was only 60 years old and was an influential man in his community. He kept about 100 colonies and his crop was about 1,000 pounds. His widow wishes to dispose of everything, honey, bees and farm.

We are indebted for the above information to Mr. H. E. Gray, our good friend of Fort Edwards, who reports the crop in that section as about 25% of normal, with a poor prospect for buckwheat honey.

Transfer of Crop From Box-Hive or Skep

In the May-September number of "L'Abeille Bourguignonne" (French), L'Abbe Total gives a method which he uses to secure honey from skeps or box-hives into modern hives.

In the spring he places a skep within a short distance of a hive of bees in movable frames. When the crop is on, he removes the skep after having shaken all its working force in front of the movable frame hive. He, of course, adds a sufficient number of supers to accommodate this doubled colony. In this way he secures more than double the average crop, for the working force of the skep is thus added to that of the movable frame colony. The honey is also secured in extracting frames, instead of in a common box. Those who have a part of their bees in gums or boxes might try this method if they dislike the idea of transferring their bees.

In order to strengthen the skep thus deprived of its force of bees, he places it on the stand of another box-hive which he moves to a new spot.

Damage to Bees by Heat

The Western Honey Bee in its July number reports a large number of losses in California from extreme heat, the combs breaking down and the honey being lost.

We had a number of such instances in Illinois in the seventies. These were caused by either direct sunshine on the hives or by too little ventilation, or both. In one case, our loss in a single apiary amounted to hundreds of dollars. Since that time we have always taken care to shade the hives and to raise them in front from the bottom-board an inch or more, according to the population. The straw mats which we use under the cover, over the brood chamber or over the supers, as the case may be, have been of great help in preserving the hive from the great heat of the sun. They are serviceable both summer and winter, for they retain the heat in winter as efficiently as they keep it off in summer. We did not yet use them at that time.

Kazan Beekeeping

We acknowledge receipt of the first number of the "Journal of the Kazan Society of Beekeepers." This magazine compares favorably with any other publication on bees. We wish its promoters success.

Kazan is in Russia, approximately 450 miles east of Moscow. It is on the great Volga river, some 200 miles east of the well-known Nizhniy-Novgorod. It is a trifle north of the 55th degree of latitude, therefore as far north as the south end of the Alaska Peninsula, the south part of Hudson Bay, the southern counties of Scotland, the northern edge of Ireland or northern Prussia. On the Western Continent, there are probably no bees kept as far north.

Insect Studies

We acknowledge receipt from the Entomological headquarters of Indiana, of studies with figures of injurious insects, potato beetles, aphides, cabbage worms and cutworms, by R. E. Snodgrass, the already famous scientist who gave anatomical descriptions and figures of the honeybee in the U. S. Bulletin "Technical No. 18" of the Department of Agriculture. Men like Dr. Snodgrass are a credit to the institutions which employ them.

SHORT CUTS TO BIG PRODUCTION

Some Time-and-Labor-Saving Methods of a Well-Known Beekeeper

CONSERVATION is the watchword of the time. To save time and labor is the first essential to success in honey production, as in other agricultural pursuits. Labor is scarce and high, in fact is the most expensive thing which the producer has to buy. Hutchinson consistently preached the keeping of more bees. The elimination of unnecessary operations is the one thing which will make it possible for the individual beekeeper to keep more bees without increasing his labor.

N. E. France is one of the best known among American beekeepers. He has served as State Bee Inspector for Wisconsin for twenty years. The first man to be given State-wide authority in the control of bee diseases, he has continued to serve until the present time. His position of General Manager for the National for many years brought him prominently before the beekeeping world. It is not our purpose at this time to discuss the public work of N. E. France, which has so often received attention from the beekeeping press. A man so long associated with the industry has unusual opportunities for observing the best methods of production, and accordingly our staff correspondent was sent to Platteville to visit the France apiaries in the interest of our readers, for practical methods of production.

THE BEE-ESCAPES ARE DOCTORED TO HASTEN THE EXIT OF THE BEES

All through southern Wisconsin one sees big piles of 10-gallon milk cans at every railroad station, for Wisconsin is a great dairy country. The first thing that attracted attention at the France home apiary was a lot of these big cans full of honey. As fast as the honey is extracted at the outyard it is drawn into the milk cans, which hold 115 pounds, net. They are easily handled, considering the weight, are tight when covered, yet the honey is easily poured out on reaching home. Since these cans are so well suited to the purpose and are everywhere available, it is surprising that they have not come into general use for hauling extracted honey from the outyards.

At the home yard there is a heating tank where all honey is heated before being placed in the cans or bottles in which it goes to market. If it is thoroughly heated, before it begins to granulate, it will remain liquid all winter. When the writer remembers how much labor he has expended in liquefying granulated honey for bottling in winter he feels that this one operation alone must be a big time saver in the France operations. When the extracting is finished, the honey is turned from the milk cans into the tanks in which it is heated and then is placed in cans or pails of the various sizes which the trade requires. Mr. France says that, even though it does not go to market until spring, there is no trouble from its candying, and that he seldom has to bother to reheat a can. When one sells his crop in the wholesale market it is as well to let it candy, since there is no gain, and there is less danger from leakage in shipping if the honey has granulated. The final consumer, however, nearly always requires his honey in a liquid state, and the producer who sells direct to the trade must send it out ready for the table.

The floor of the honey house at the honey yard is on a level with the floor of the truck, so that the cans can be rolled in without heavy lifting. A light block and tackle lift the big cans up to the tanks in which the honey is stored, so that there is a minimum of lifting.

At each of the outyards there is a permanent honey house with cellar for wintering the bees beneath. The extracting is done at the yards and a pipe from the extractor carries it into a tank in the basement below. This avoids the necessity of handling the honey by drawing it from the extractor or the use of a honey pump to carry it to a settling tank. The principal objection to the honey pump seems to be that so much air is pumped into the honey that it granulates almost immediately.

An ingenious method of straining the honey is in use. Enameled wire cloth, such as can be purchased at any hardware store, is rolled into a cylinder about the size of a stovepipe, and closed at one end. It is made high enough to reach to the top of the tank, and the honey pumped into it. The honey, of course, runs through and out all around, so there is little difficulty from clogging, as is the case with a strainer opening only at the bottom. Our picture shows one of the France settling tanks with a board across the top, on which the strainer was rested for the picture. The honey is strained through a cloth while hot, before placing in cans for market. The first straining from the extractor, followed by settling, leaves but little to be removed by the final straining. If the honey is strained in this way, it runs through the cloth much more rapidly than is possible where it is put through the fine strainer while cold at the time of extracting.

Everything about the place seems planned with an eye to saving time. Even the bee escapes are doctored to

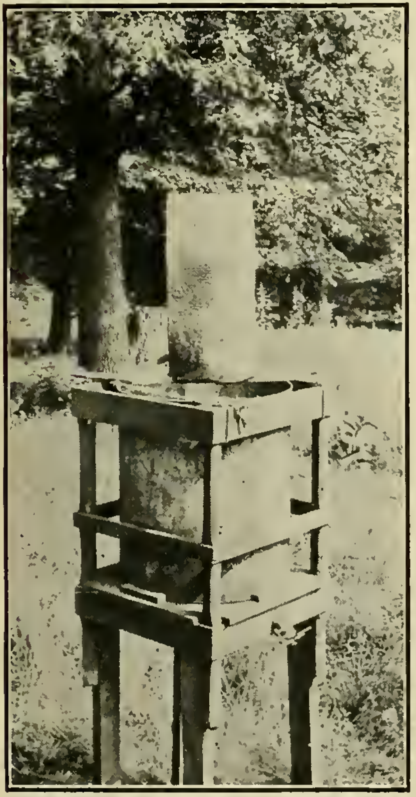
ONE OF THE FRANCE OUTYARDS

hasten the exit of the bees. Where an ordinary Porter escape is used in the center of the usual board, strips are nailed to the board, dividing the board into four equal parts and centering at the escape in the middle. This starts the bees at once to the escape instead of leaving them free to waste so much time hunting for the exit. Where the ventilated board is used, two escapes are used in opposite corners with a strip running diagonally across.

Frank France and his father both make use of the same equipment, although they maintain their bees separately. At some yards each has a considerable number of colonies, so that it is impossible for a stranger to separate the work of the father from that of the son, when it comes to honey production. Bees have been kept in the home yard for fifty years, and Frank is of the third generation. The late Edwin France settled at Platteville in an early day and beekeeping has been the principal dependence of the family for half a century.

The bees are all wintered in the cellar. Various plans of wintering have been tried on an extensive scale and the final judgment is that for that latitude the cellar gives more satisfactory results, with less labor. The bees are wheeled into the cellar in the fall, after being examined to make sure that stores are ample and that other conditions are right. They receive no further attention until time to remove them in the spring, and they come out in good shape. For a time tenement hives were used, then later winter cases. If the cellar is properly built there is little trouble to winter the bees successfully.

Clover is the principal crop, with basswood next. The general average one year with another is 100 pounds per colony of surplus. The man who gets an average of 100 pounds is seldom hunting for a better locality, and he usually has developed methods of interest to others of his profession.



WIRE CLOTH STRAINER. IN USE IT SITS ON THE BOTTOM OF THE TANK

THE FRANCE HOME YARD WHERE BEES HAVE BEEN KEPT FOR FIFTY YEARS

Causes of the Heavy Losses of Bees During the Winter of 1915-16 in British Columbia

By W. J. Sheppard.

It has been estimated that at least 40 per cent of the bees in British Columbia died during the winter of 1915-16. Many enquiries have been made as to the reasons for this and whether it is preventable. The writer can only answer for the Kootenays, as he is not familiar with other parts of the Province, where the conditions may be different, although it would appear that as the mortality was heavy all over the country the same reasons are accountable for it. In this section the summer of 1915 was an abnormal one. Rain and low temperatures, with absence of sunshine, prevailed during July and well into August, so that the white and alsike clovers, which are the principal sources of honey production here, secreted very little, if any, nectar, and the bloom was over much sooner than usual. Later in August the weather improved, but at that time there was nothing much the bees could gather except fruit juices and honeydew. The writer's attention was drawn to the very unusual and peculiar appearance of the bees while raspberries were in fruit. The abdomens of the incoming bees were a deep orange-red, which was found to be caused by their honey-sacs being laden with the juice from the raspberries. The red color of the juice showed up clearly through the yellow segments of the Italians, but would probably not have been noticeable in black bees. Later on large quantities of honeydew were gathered, mostly from the poplars, commonly known as cottonwoods, and also from birch trees.

This being the case, it is little wonder that the bees wintered badly, especially as the winter following was abnormally severe with longer spells than usual below zero. Bees well provided with wholesome natural stores, preferably of clover honey, or thick sugar syrup, are able to stand a considerable extent of cold weather, even if the hives are not well protected. Cold causes the bees to consume larger quantities of food for the purpose of keeping up the heat of the cluster. If they have an ample supply of honey, or sugar syrup, in the hive, they can consume comparatively large amounts of this without its causing undue distension of the abdomen, as there is very little waste or refuse matter to these foods. There is then little risk of dysentery or diarrhoea occurring. Fruit syrup and honeydew contain larger proportions of starch and other foreign matter, and moisture, and considerably less sugar than pure honey. Therefore, larger quantities of these substances are required by the bees to keep up the same proportion of animal heat. As they contain more waste matter, distention of the abdomen, followed by diarrhoea, occurs after a comparatively short period of confinement to the hives, resulting in the death of the bees. When they are able to fly at intervals of two or three weeks during the winter months the honeydew is not so harmful, as they are then able to void all excrement, or waste matter accumulated, which nature impels them to do while on the wing. Honeydew on the leaves of trees collects dust and also becomes foul with a black smut or fungus, and it is very likely that this also has an adverse effect on the bees by setting up irritation in their intestines, and thus causing dysentery. Every year the bees gather more or less honeydew in this portion of British Columbia in the fall and beekeepers need not be always on the watch for it.

A little of it will not do much harm, but if there is an excessive quantity, it must be removed or the bees will not go through the winter successfully. Probably the best plan is to remove the frames that contain it, bodily, in September, and substitute empty combs and feed up quickly with good, thick, warm sugar syrup to take its place. If frames of comb containing honey are on hand it would be better to exchange the frames of honeydew for these, as the storing of syrup in the fall in large quantities wears the bees out prematurely and this causes excessive mortality in the winter. The combs of honeydew can be put back in the hives in the spring, when it will be used up for feeding the brood, so that it need not be wasted. If the matter is delayed until too late in the fall to feed syrup, and combs of honey are not on hand, a good-sized cake of well-made candy placed over the frames, after the honeydew has been removed, will carry the bees safely through the winter.

Honeydew, caused by aphides and other insects that live by sucking the sap of trees and plants, is most abundant, as a rule, after spells of dry weather. A very large amount of sap is extracted by aphides which have the remarkable habit of ejecting from their food canal surplus food material through two small tubes provided them by nature for this purpose, in the form of the sugary substance commonly known as "honeydew." At one time, before it was discovered that honeydew is an insect excretion, or more correctly, an ejection, it was supposed that it was simply an exudation from the leaves of trees and plants, which its appearance on their upper surface would seem to indicate. This, no doubt, is how the name of "honeydew," which does not appear at all appropriate to the present known conditions, first originated. Honeydew varies considerably in color and flavor from different kind of trees. That gathered from the oak is usually of an inky blackness and partakes of the flavor and nature of the tannin for which the oak is noted. On the other hand, honeydew gathered from the birch is light in color and not so very easily distinguishable from honey itself. A few plants are known to exude saccharine matter apart from the blossoms, which bees sometimes gather, which, as it is not associated with aphides or other sap-sucking insects, should therefore not come under the same category as honeydew, as it is a different material. One of the most familiar examples of this is the vetch that secretes a sweet substance or true nectar at the axils of the leaves. As a general rule honeydew does not granulate, and the water content being greater than the legal standard, viz. 25 per cent, for Canadian honey, under the provisions of the Adulteration Act, for this, if for no other reason, it should never be put on the market and sold as honey.

A good many colonies of bees die during cold winters by reason of a clear beespace, or passageway, not being provided by the beekeeper over the tops of the frames, and sometimes through insufficient ventilation, the latter causing the often fatal condition known to beekeepers as "sweating."

Nelson, Kootenays, B. C.

Shall We Carton Our Comb Honey

By F. Greiner.

MR. EDITOR: I want to draw the attention of the beekeepers to this fact, that nearly all merchandise, whenever it is practicable, is put up and handled in sealed packages. It is true that in some stores such things as crackers, ginger snaps, rolled oats, other cereals, etc., are dealt out by the pound in quantities to suit purchasers, but it is also a fact that the more refined, the particular people, demand such goods in sealed cartons. We do not like to see the grocery clerk put his hands onto the things we want to eat. A clerk may have handled some filthy tobacco, or fish, or cheese, or he may have used his fingers for—well, we can imagine purposes for which untidy fingers may be used—and without washing he may grab into the cracker barrel and deal out the crackers a customer wants. Honey is not often touched by the hands of a clerk, but is subject to taint in many ways. Dust accumulates thereon; flies leave their mark upon it; besides, grocerymen do not like to handle comb honey on account of its frailty. It behooves us, therefore, not only to cater to the wishes of the retailer but those of the man and the woman who want everything for human consumption put up in a sanitary manner. The carton solves the problem. Some of our beekeepers sell their product without putting it up in this more expensive way. This is true. I have, for years. The time, however, is here now when the change to the more sanitary method is absolutely necessary. Comb honey will not find sale very much longer without being put up in cartons. I should even favor a law compelling producers of comb honey to so put it up. The manner in which comb honey is displayed in many a retail store, exposed to dust and flies, cannot help but produce a detrimental effect. Sales will fall off or will be unsatisfactory as to price. The wise will adopt the carton, I dare say. Mr. E. R. Root said, at the field meeting in Camillus a short time ago, that they had **no losses with comb honey shipped by rail when cartons were used,** which is not a small matter in favor of this newer method.

Naples, N. Y.

THE FRANCE FAMILY AT HOME

Western Market News

By Wesley Foster.

BEEKEEPERS seem to have little faith that comb honey will advance in proportion to extracted honey, but indications now look more favorable for comb honey. New crop comb honey has been sold to retailers at $4.00 to $4.50 per case of twenty-four sections. These sales have been small in quantity. Carload offers of $3.25 to $3.50 are reported and doubtless most of the comb honey crop will be sold at these figures or better.

Extracted honey is selling at 10c to 12½c per pound f. o. b. Colorado common points. These prices are for large lots. The price to the retailer is from 12c to 15c, where it is sold in bulk.

One criticism that should be made of the market reports is that qualities and colors are not always mentioned. When we speak of the price of extracted honey in the Rocky Mountain region, we have in mind honey running from light amber to water white. The tendency is to make less and less differentiation between these grades in price. Light amber honey of equal flavor is worth as much as water white, and the time is coming when it will bring the same price.

When the price of West Indian honey is quoted, how are we to know whether it is dark strained honey or white extracted? There is too wide a range of quality from different sources, unless the prices of the various grades are mentioned. Let us have quotations something like this:

Southern, dark, strained	8-9c
Southern, light amber, extracted	9-10c
Southern, white extracted	10-12c
Cuban, dark, strained	8-9c
Cuban, amber extracted	9-10c
Cuban, white Campanilla, extracted	12c
West Indian, dark strained	8-9c
West Indian, dark extracted	9-10c
West Indian, light amber extracted	10-11c
Orange, white, extracted	13-15c
Sage, white, extracted	13-15c
Alfalfa, sweet clover, white extracted	12-14c
Alfalfa, amber, extracted	10-11c
Alfalfa, light amber, extracted	11-12c
Mesquite. light amber	11-12c
White clover, extracted	12-14c

These prices are simply suggestions of the probable relative values of the various honeys, taking it for granted that the honey is well strained, clear and thoroughly ripened. A variation in price would be made according to the container used, whether tin cans or barrels.

Let us have definiteness in all our price quotations. The fact is that the average beekeeper does not know within two cents per pound what his honey is worth at his station after he has read the market reports. This is partially his fault and partially the fault of the report. The beekeeper should learn how to apply a report to his own case and the report should make it very easy for him to do this.

A Visit at Nivers

By W. A. Pryal.

NIVER, the New Yorker, in California a beekeeper became.
All today, with vim, it's just honey
And tomorrow the prize will be money.
But whether 'tis honey or money, he's always so funny.

And so in unmetrical rhyme may the truth be told of S. A. Niver, who came to California some six years ago. After a few weeks spent in California he took up his residence in that portion of the city of Oakland called Fruitvale. It was at this time that I formed his acquaintance. Having a desire to get into the beekeeping game as it is played in the Golden State, he undertook the management of my apiary upon shares. The honey crop that year was not so good as usual, still Mr. Niver did fairly well. There was little light-colored honey, so a quantity of water-white honey was purchased in the wholesale market. Mr. Niver, being an expert in the blending of honey, set to work, and after heating all the honey, made a blend that suited his fancy.

He had a bosom friend, a Mr. A. B. Colburn, who formed a honey-canvassing team with him and the two drummed a portion of Oakland until the entire crop was sold from door to door, yet the city was far from covered. It takes time and energy to canvass a city of over 200,000 inhabitants. But the work was well done and the pair, with my assistance in furnishing equipment, including horse and rig, would have started the campaign the next year but for the fact that Niver and Colburn got the California bee so badly tangled in their bonnets that they must forthwith embark in the bee and honey business on their own account. They first invited me to throw in my lot with them in Monterey county. I did not care to go so extensively into the bee game, so I remained without the circle. Mr. Colburn had a friend, a Mr. Smith, a gentleman living in Pennsylvania, but who had large timber and lumber interests in California, who financed the new firm and started them in a way that would have given them as good an apiary as was to be found in the State.

SCENERY ON THE WAY TO NIVER'S. THE MOUNTAINS ARE THE HOME OF THE SAGES.

Away out in the mountains, 56 miles by the crookedest roads one could find anywhere—full of rocks, holes, high grades and down grades, creeks without bridges, through this canyon and down that gulch, and gates innumerable, one journeyed for hours by auto to get there. To go to Soledad, the nearest postoffice, was a day's journey, and to get home took another day.

In 1914, myself and family went out to visit them and spend a few days in their mountain solitude. After much trouble we reached the place. Ours was the second auto to go into their "diggings" and it came near being the last trip for that particular automobile. It gave me the worst experience I ever had in driving a lame car, nearly new, nigh sixty miles. It is surprising where a beekeeper will go with his bees to get honey! The path of an apiarist is not strewn with roses, neither is it surrounded with giddy pleasures. We found our friends comfortably domiciled in an old adobe house to which Captain Niver was adding a big room of reinforced mud fashioned in the most approved art of "Class A" concrete buildings. Their place was called "Hill Crest." Though it was well nigh on top of the hills, there were higher ones all about. The place formed a charming little valley, though far from the haunts of men. It had been established by some home-seeking pioneer frontiersman some fifty years previously. How they ever got there in those days is more than I can make out! And away out there a nice family orchard of fruit trees and grapes was planted and was doing wonderfully well. For years, until the Nivers came, it had been neglected, but it soon revived under care.

MR. AND MRS. S. A. NIVER, NOW IN CALIFORNIA.

The apiary was admirably situated some distance east of the house on a little knoll by itself. On the slant of the hill in front of the apiary, was the extracting house and storage rooms. The supers of extracting combs were run by gravity into the extracting room and the honey, as it was thrown from the combs, ran through the strainers into the big tanks below. A wagon could be driven up to the storage room and the filled honey-cases slid into the conveyance. I am almost tempted to say that the wagon could also run by gravity down the mountain thirty miles to the Salinas plain, but it was not down grade all the way.

Mr. Niver built after his own ideas a gigantic extractor to take sixteen frames at a time. It was automatic and built in sections that it might be taken apart, tank and all, and shipped without much trouble from place to place. I have learned since that he has abandoned this invention for the general 8-frame power extractor, of which I shall write more at another time.

I was told that the honey-flow in this location was poor; the elevation was considered too much for successful nectar secretion. They had two other apiaries in different directions further off and lower down the mountains. At one of these in particular, the flow was very satisfactory, and at this point they hoped to establish the major portion of their colonies in future years. They also complained that the bees in this location devoted much time and labor uselessly to the gathering and storing of pollen. So great was the accumulation of pollen in the combs that the space for honey storage was greatly curtailed. The pollen would dry hard in the combs and was useless to the bees or to man. In order to rid the hives of this accumulation, the pollen-infested comb was cut out and discarded, or, when practical, was put into the wax-rendering pot and made into beeswax. This pollen was mainly gathered from that useless and unornamental shrub, Chamiso, or, botanically, Adenostoma, found far too commonly all over the hills and mountains along the Pacific. Whole hillsides may be seen covered with it.

Oakland, Calif.

Advertising

By W. S. Pangburn

MUCH has been written of late regarding both local and national advertising of honey. The subject is a live one and should demand the attention of every progressive beekeeper. Most articles that have appeared have been instructive and have furnished food for thought.

While we may not all agree as to how to advertise, we can at least agree that it should be done, that honey may receive the prominence it should along with other foods, and beekeepers may find a ready sale for all they produce at remunerative prices.

Organization is another live subject, and should be boosted and encouraged by every beekeeper who produces honey for the market. In fact, it is absolutely necessary if we are to place our business on a level with other lines.

It would take an enormous sum to make much of a showing at national advertising if printers' ink was the only method used. It would be very hard to raise this sum for that purpose alone, as some of the older beekeepers already know. It would be another hard proposition to get beekeepers in general to contribute freely to a fund for this purpose, unless they could be made to see some direct benefit from the advertising, and this would be another problem.

I have practiced personal advertising by signs. The signs are put up principally on the main auto roads. A good place for a neat sign is at a railroad station, where it can be easily read from the car window, giving your name and address.

It may take a few jars of honey to get some of the signs where wanted and where the party getting the honey can look after them, but it will pay. The small signs such as "Eat Honey," "Hot Cakes and Honey, O! How Good," "A Reminder, Eat Honey," are strung out one, two or three in succession. Then one reading "Honey! Nothing Finer! Write for Prices. W. S. Pangburn, Center Junction, Ia.," appears. The latter informs the prospective customer where the honey may be obtained.

There is no limit as to the distance these signs may be strung out from the apiary. Just load up Henry's "Lizzie" and start out, or any other "Lizzie" that you happen to have, and if you haven't any, sweeten up with a little honey your neighbor who has one and get him to take you.

This method of advertising, fifteen or twenty years ago, would have been time wasted, but not so now, with the auto traffic, both state and interstate. Other business lines are adopting this plan of advertising, as one will see by the signs as he travels over the country. They are painted everywhere, even on large boulders in the fields.

The signs need cost little more than your time. I use boards from shipping boxes, dressed on one side. Put cleats across the ends to keep them from splitting and warping, and to hold the boards of different widths together in making the larger signs.

Give them one coat of blue turpentine lacquer, and the next day they are ready to letter. Turpentine lacquer is very thin and covers a lot of surface. It is usually cheap if your paint dealer doesn't ask too much profit.

The last I bought cost me $1.00 per gallon at wholesale, but it is higher now, on account of the war. The lacquer is also handy to coat over cans that have become somewhat shady. While it is not as durable as pure lead and zinc paint, it is much cheaper and will last probably as long as the sign.

A little precaution should be taken in putting up the signs to avoid facing them south. In fact, no sign that is expected to give service for any length of time should face the south, as all sign colors are necessarily delicate and should be protected from the sun as much as possible.

One should not put too much money in signs to be placed along the roadsides, as they are the target for many a shotgun, and must necessarily be cheap.

I use blue lacquer, and letters in yellow. This makes a sign that can be read at a long distance, and these

MRS PRYAL AND DAUGHTER AND MR. AND MRS. NIVER. TAKEN IN THE PRYAL GARDEN.

colors are used largely on that account.

But you say, "I am no sign painter." Very well, get a set of Rec's adjustable brass stencils with 1½-inch letters, which will do very well, and anyone who can daub can make a very good looking sign; at least it will do in lieu of something better. If you wanted "Honey" in larger letters, which would be still better, you can have a stencil made for the word "Honey," and you have a pretty good outfit for the work.

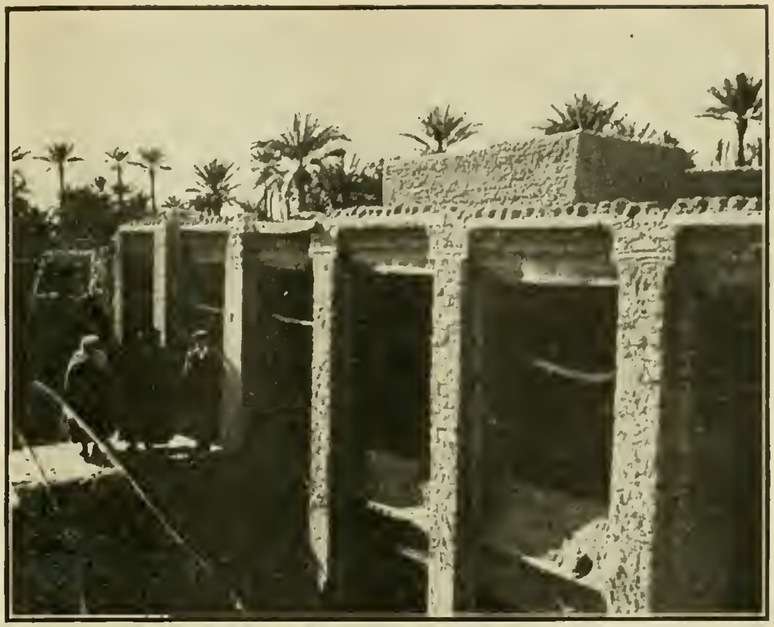
While a stencil sign does not possess the air of a hand-painted one, it will do very well. The signs that are placed at the stations, near, and in the city limits should be made somewhat better, and of your best lumber from the shipping boxes. I paint them with white paint, then letter in red, but sometimes use green on the lettering to give a little better display. It draws more attention than black on white, and that is what we want.

A lot of these signs can be made at odd times, and a stock of them kept on hand, and when going any distance with your car (I use a Ford) load in a few and replace any that may have been destroyed, or put up an occasional new one. Don't be afraid of putting up too many.

This plan of advertising is not intended to take the place of all others, and to be the remedy for all the ills of advertising honey, but it appeals to a certain class, and can be worked out by the beekeepers themselves, right in their immediate vicinity, helping to advertise honey nationally, reaping the benefits of the advertising in their local community, and quite likely capturing some transient trade, also. If every beekeeper would put this plan into operation it would cost little, accomplish much, and we would see results.

The plan I have described appeals mainly to the traveling public.

Use little red stickers, also, giving the food value of honey, which, in the writer's opinion, are more valuable, because they are educational and give a good reason why one should eat honey. The writer uses them, but has them printed on the envelopes to avoid so much licking, for the glue used on some of the stickers is a little off flavor.



A DWELLING IN FIGHIG, MOROCCO, WITH TWO COLONIES OF BEES
(See Text.)

Do not wait for the National or the U. H. P. to come down in your local market and boost your honey, but boost it yourself, and thereby help the National to accomplish some of the big things it has up its sleeve, and incidentally push your own business up a notch.

Center Junction, Ia.

EAT HONEY
HONEY
FOR IT'S
GOOD
PROV-24-13
EAT HONEY
NATURES SWEET
HONEY
BY PARCEL POST
PANGBURNS APIARY
CENTER JCT. IA
O!
WRITE FOR PRICES

SOME OF PANGBURN'S COLORED SIGNS TO BOOST HONEY SALES.

Bees of Morocco

We are in receipt of a letter from Mr. Bernard, treasurer and corresponding secretary of the "Nahla" Association of Beekeepers of Algeria, who is a retired comptroller-general of the railroads of Algeria. Mr. Bernard encloses with his letter some views of Fighig, Morocco, the terminus of a colonial railroad. Fighig is the center of a great date-producing region. It is located near the head of the Zousfana river, which runs to the Sahara desert and loses itself in the sands.

The bees of Fighig, which are very gentle in disposition and of yellowish color, are often kept within the home. The accompanying photograph shows the second story of a dwelling open on one side. The terrace or flat roof, made of palm-tree trunks covered with packed clay, is supported on three sides by solid walls and on the fourth side by the pillars shown in the photo. To hive the bees, sun-dried bricks have been laid between the pillars in a double row, with the split half of a palm tree for roof. On each side of this small slabs have been laid vertically and covered with the same clay that is used for making the bricks, which is called in Spanish "adobe," and in Arabian "toub." The two holes which are noticed at the left of one pillar and at the right of another, are the entrances for the bees. The combs are built lengthwise, and this direction is secured by fitting a comb inside in the proper direction as "bait." Mr. Bernard writes:

"The Fighighians are very fond of their bees. I had great difficulty in buying some. As I used a little smoke to drive the bees into a small hive in which I had placed some combs, the proprietor seemed inclined to consider me as a barbarian. It was with his hands that he handled the lagging bees, and although they stung him he did not appear to care.

About Wintering Bees—Some English Methods

By A. H. Bowen.

Despite the usual mildness of an English winter, here in the West the well of knowledge on how best to avoid winter losses is still an inexhaustible one, and the perfect system of hive management to assure this has not yet been discovered.

The best that we can do is to be guided by results from methods employed in past seasons, and so arrange the autumn preparation that the bees may be enabled to meet the changing elements of weather and temperature as they come through the winter, and have the reserve of energy to build up rapidly in the spring.

Stocks that die out in March are generally those that were weak in the fall, and though the axiom "keep stocks strong" is so well known, the losses by starvation, queenlessness and the under protection are a proof that it is not sufficiently acted upon.

With us, winter preparation begins as early as August.

Directly the supers are removed each colony is examined as to its queen, strength in bees, and amount of honey in the brood-combs.

Colonies that have sent off swarms and are, therefore, known to possess young queens, are passed over till later, as are also those which have yielded heavy weights of honey.

These are dealt with later on. The necessity of re-queening any failing colonies is as great every year, but the question of stores depends largely on the season.

If the season has been an "off" one, with the yield light, and the bees have bred heavily and exhausted their stores before winter, a considerable amount of syrup has to be fed.

On the other hand, if the harvest has been good, as in the present year, when all brood-chambers are blocked with honey, a great deal of labor and expense is saved.

Besides, bees unquestionably winter better on honey than on syrup stores.

All the stocks noted to be re-queened have their roofs marked with blue chalk.

On a fine day, suitable for opening colonies, as many queens are removed as there are young ones to take their places.

These are taken from nuclei, and introduced in mailing cages by the popular candy method.

If a few simple precautions are observed the losses are few.

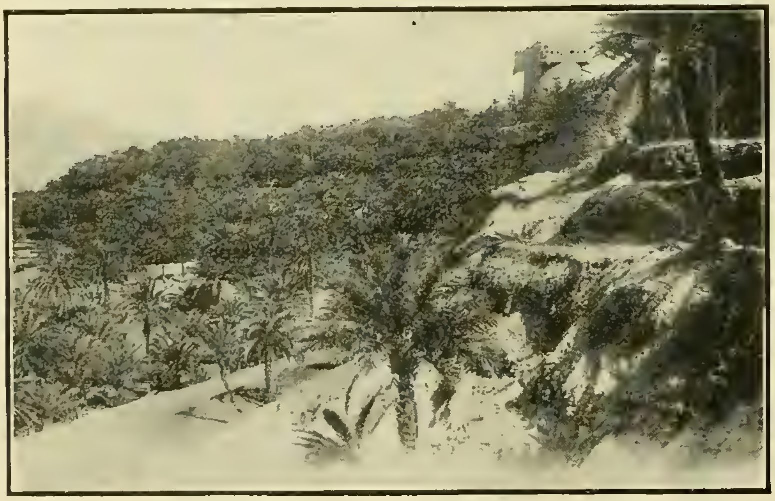
A quick inspection ten days after giving the new queen will reveal any cases of queenlessness. These are at once dealt with by giving another queen, the natural queen-cells being first torn down. As fast as each colony is re-queened the weight of stores, if insufficient, is made up either by giving reserve combs taken from "emergency hives," by equalized stores, or by feeding sugar syrup.

When the brood-chamber contains 25 pounds of stores the bees are considered to have sufficient to carry them through.

I should here explain the purpose of "emergency hives."

Two or three good colonies in each apiary are set apart for the work of accumulating stores.

Supers containing ten of our standard brood-combs are given as needed through the season.



CASTLE AMONG THE PALM TREES OF FIGHIG

No honey is extracted, but the filled combs in the fall are distributed to needy colonies in order to make them rich enough for wintering, any small balance being frequently made up by giving a few pounds of syrup.

The calico coverings on the frames are frequently eaten through and torn. These are renewed, as are also the felt upper coverings, so that each stock shall have three.

All such work is planned to be completed about the end of September, so that the normal reduction of the brood-nest can take place.

Late feeding unduly stimulates breeding, and past experience goes to prove that late breeding in the fall means a late start in the spring.

Of the various ways in vogue of packing bees the following is the one I prefer:

All our hives are provided with an outer cover known as a telescopic "lift," which acts in summer as a cover for the supers of sections, and in the fall, when reversed, it slides over the brood-chamber, forming an extra thickness of wood all around, adding to the snugness of the bees inside.

From October 1 to 15 the hives in all apiaries are "closed down" for winter.

Two sticks about 8 inches long and as thick as one's finger are laid across the top of the frames and under the quilts to provide a "winter passage" in frosty weather.

The coverings of warm felt are adjusted, and on them are laid a couple of newspapers.

The telescopic lift, when reversed, presses the paper tightly down on all four sides, and so all draughts are excluded. The zinc-covered roof efficiently keeps out wet. Some enthusiasts place a 2-pound box of soft bee-candy underneath the quilts, and this provides an excellent passage way. But if the stock is amply stored the candy is neither desirable nor necessary. Its value is only as an emergency food in the spring if stores run short by oversight.

Treated like this and kept warm and dry bees can stand any amount of hard frost in winter time; and there is little to do beside keeping the restricted entrance from getting filled up with dead bees during a cold spell.

Mice, which are sometimes troublesome, are kept out of the hives by having a guard of perforated zinc tacked along the entrance.

To winter successfully the moral is "keep young queens."

Colonies with vigorous queens, strong in bees and abundant stores always winter safely.

Cheltenham, England.

Winter Packing for Bees

By F. J. Rettig.

An experiment with winter cases and their success in wintering last winter may possibly interest some reader.

I made the test with 40 colonies, all wintered in two-story 10-frame "L" hives, and tried to have them all about equal in strength in bees, with not less than 40 pounds of honey to each colony.

I began packing the last of October and finished early in November, each hive having a separate winter-case. All had 4 inches of packing on the bottom, planer shavings. All had canvas or burlap 2, 3 or 4 thicknesses over the top brood-chamber, then a super on top of the burlap.

These supers were all filled with burlap, old clothing or anything to absorb the moisture. I put the top cover on and put 3 to 4 inches of planer shavings over all. Four colonies were packed with 2 inches of planer shavings on four sides; four others were packed with 4 inches of shavings on the sides; the balance were packed with 3 inches of packing on all sides. The entrances were all closed down to 2 inches, except where the wind had a better chance at them, and they were closed to 1½ and 1 inch.

The ones packed with 2 inches of packing, three out of four died; the ones with 4-inch packing were in good condition, but the ones with 6 inches of packing wintered finely. I met Dr. Phillips at the Indianapolis and Chicago conventions and he advised plenty of packing, which with this winter's test proves the most successful. While the winter was rather severe, the temperature dropping to 10 degrees, the zero weather lasting about three weeks, yet the bees had several nice flights during December, January and February.

Wabash, Ind.

(Plenty of packing is evidently desirable, but you should not have lost as many as three out of four with 2-inch packing, for many colonies through the country wintered without any packing at all. There must have been some other trouble.—Editor.)

My Neighbor's Garden

By C. D. Stuart.

ASIDE from the almond, my neighbor produces few blossoms of more than passing interest to our bees. He has not time for gardening, other than the spasmodic week-end cultivation of a kindergarten. At other times, the four adorable human flowers in various stages of unfolding that flourish there, must take chances along with the almond tree. For my neighbor is up with the bee, hustling to make the 6 o'clock Commuters' train, and he continues to hustle until the same train returns him to his family at 7 in the evening.

Flowers that can walk, talk and ask questions were new botanical specimens, and soon outrivaled all other interests. Specific analysis began one Sunday morning. They had assembled beneath the almond tree. It was a soft, spring-like day in February, the tree was in full bloom, and our bees had also assembled there, in the branches overhead.

Prudence demanded that children and bees be separated at once. But how? We could hardly expect, nor did we desire, the return of the bees without the rejuvenating nectar contained in the early fruit bloom. But the transplanting of a kindergarten that apparently had taken root in that particular spot, might prove an awkward undertaking. Also my neighbor owned the few straggling trees proudly referred to as "my orchard," which was another point in favor of the kindergarten. It would be equally awkward, as well as futile, to transplant our hives that stood facing the orchard and separated from it only by a low cement wall and an incipient hollyhock hedge. The situation, therefore, was one that required diplomatic handling.

"Whose little kiddies are you?" I asked, by way of introduction.

Eight round eyes were instantly focussed upon me, while I made a rapid mental classification of the genus flora. There were Black-Eyed Susan, the eldest; Narcissus; Pansy, and Johnny-Jump-Up, the baby. But they had no intention of satisfying idle curiosity. Possibly they had never considered their origin. They took themselves for granted as unconsciously as their horticultural prototypes. Instead, they answered my question in true Yankee fashion by asking another.

Black-Eyed Susan pointed to the tree. "What's they?"

"Honeybees," I replied, obediently.

"O-o-oh!" responded the quartet, in unison, and gazed up into the blossom-laden branches and listened to the busy humming with renewed interest—all except Johnny-Jump-Up, who, astride his hobby-horse, was galloping toward the house.

"Where's the honey?" demanded matter-of-fact Narcissus.

I broke a branch from the tree and showed them a bee at work collecting pollen and loading it onto his legs, and explained to them that because bees never can remember to wipe their feet carefully, when they visit other flowers, some of the pollen is sure to come off, and that was what made fruit grow on the trees. They watched until the bee flew away, then, breathless with excitement, asked, "Where's he going?"

"To carry the pollen back to the hive," I told them; "the nurse bees make it into bread for the babies."

"O-o-oh!" repeated the trio, and made a bee-line for our hives.

The unexpected advance was temporarily checked by the retaining wall. There I took a determined stand and explained further how each hive is guarded by sentinels and scouts, and vividly described the anatomy of the stinger with which each is provided and its power of inflicting pain. Suddenly a shriek pierced the air. "There!" I concluded; "someone is getting stung now!"

Black-Eyed Susan settled herself comfortably on the cement wall. "It's only Daddy spanking Johnny," she announced, casually. "I want some honey."

I was in despair. Fortunately at that moment their grandmother called them to dinner; but they deliberately ranged themselves in a row on the wall and eyed me expectantly; while the bees, flying low under their heavy loads, like bullets whizzed past them into the hives.

"Su-u-san!" An authoritative masculine voice now called.

The three culprits crouched lower and were silent.

"Su-u-san, P-an-sey, Nar-cis-sus!" The voice was drawing nearer.

"Oh, Daddy," called out Black-Eyed Susan, jumping up as he approached, "come and see the bees take pollen to the babies!"

"They make it into bread," chimed in Pansy.

THE ATTRACTIVE ALMOND BLOSSOM.

"And they make fruit on trees, too," added Narcissus. "Maybe they'll make us some nuts."

But their parent was one not easily diverted. "Never mind the bees; didn't you hear your grandmother calling you?"

Each flower hung its head and dug its toes into the fresh earth.

"Come along with Daddy, or he'll have to spank all of you!" After which ultimatum, my neighbor marshaled them out of the danger zone.

But my relief was of short duration. Each succeeding day brought fresh anxieties. They knew no fear and their curiosity kept pace with the growth of the almonds that had set in large numbers on the branches of the tree. At last, just as we were about finally to classify the kindergarten as a nuisance, my neighbor bodily transported it in his touring car to the beach for the summer. My, but we missed 'em!

The almonds hung ripe in the tree and our bees had long since sought other pastures, when my neighbor returned and opened up the big, silent house. It was Sunday morning. Sturdy and sunburned, the kindergarten again congregated under the almond tree. "Daddy" was there, too, shaking down the nuts, which they were putting into baskets.

I hailed him from the dividing wall. "How's the crop?"

"Bully! Never had a hatful before this year."

"How do you account for it?" I called back.

"I know!" cried Black-Eyed Susan, upsetting a basket of almonds in her eagerness; "the bees did it, Daddy."

Los Gatos, Calif.

A CALIFORNIA ALMOND TREE IN FEBRUARY.

"THE BEES DID IT."
ONE BRANCH OF A WELL-SET ALMOND TREE.

Increase With Little Cost

By Frank C. Pellett.

THE usual methods of artificial increase, such as division, or forming of nuclei to be built up, are made at the expense of weakening the colony to a considerable extent. Should the season prove unfavorable after nuclei are formed it may be necessary to feed them for a long period or unite them again with the parent colony. I have been experimenting in a limited way with a plan which takes nothing from the parent colony, except such honey as is necessary to rear the brood composing the new colony. There is no risk, since the old colony is not weakened by removing part of the field force and the division is not made until the new colony is strong enough to shift for itself under almost any conditions. This may seem like a strong claim, but having been uniformly successful with the plan in an experimental way for several years I now feel justified in presenting the details.

The plan is the outgrowth of a system of swarm control in the production of extracted honey as described in Productive Beekeeping. If the extracted honey producer can keep his colony together during the season he should be able to get maximum results. Some increase is necessary to replace such colonies as are lost through failing queens, poor wintering and other causes, even though the beekeeper does not care to extend his business. If the bees can be kept from swarming and the young queen be mated in a separate apartment she can rear her own colony in due time and they can be removed without deducting anything from the production of the old queen, all of whose progeny remain with the parent colony.

To begin with, when the colony becomes populous I place the queen on a frame of brood in an empty hive-body and fill out with empty combs. This is set in the same place occupied by the hive, so that the workers coming from the field will find their queen with an abundance of room in which to lay. This is the system of swarm conntrol advocated by Demaree to this point. I now place an excluder over the hive-body containing the queen and over this a super of empty combs. On top of these is set the original hive-body containing the brood. A hole is bored in this upper body to give the bees an extra entrance above. About twenty-four hours later a ripe queen-cell is placed in the upper story with the brood. If no queen-cells are available the bees will often build cells of their own accord. The time is shortened and success insured by having a supply of cells ready in advance. The queen should emerge within a day or two and will shortly leave the hive by way of the auger hole for her mating flight. Within two or three weeks she is laying in the upper hive and the regular activities of the bees will continue without interruption in the lower story. By this time all the brood from the old queen will have emerged. The brood which now appears in the upper story is a net addition to the resources of the colony and when the upper story is nearly filled with sealed brood it can be removed and placed on a new stand without checking the work of the colony.

This year I gave a queen-cell to a strong colony on May 21 as above described. On July 14 the upper hive-body with a young queen and seven frames of brood were removed to form a new colony. The old colony was apparently just as strong as it had been at any time. Yet possible swarming had been prevented, temporarily at least, by the Demaree plan of placing the old queen in the empty hive below. I now have two good colonies which are much better than a parent colony and swarm of the best we have had this season. In this way I have been entirely safe, as the new colony was not removed from its parent until both were provided for. Other cases have been successful as well.

After three years of trial I find this the most satisfactory plan of making increase. I have never tried it on a large scale, but if it succeeds generally on a small scale I can see no reason why it should not on a large scale. Both queens can be left in the same hive until the close of the honey-flow if desired, but there is nothing to be gained after the upper hive-body is filled with brood. If both are left in the hive until late fall one of the queens will usually disappear.

I do not make any claims to offering something altogether new or original, but have simply adapted different suggestions to my own system and present it for what it is worth. If desired, the process can be repeated as soon as the upper story is removed, as by this time the old queen will have filled the lower body with brood again. By beginning early it should be possible to take two or possibly three new colonies without reducing the honey crop from the parent colony to a serious extent.

Atlantic, Iowa.

Making Vinegar From the Washing of the Cappings

By The Editor.

"I would like the receipt for making vinegar from cappings."—J. J. Corbeille, Jr., North Freedom, Wis.

At the present day many beekeepers are using a capping-melter to melt up the wax and secure the honey out of the cappings at once. But there are objections to this implement. When the temperature is already between 80 and 90 degrees it is not very pleasant to increase it by the use of artificial heat of any kind within reach of those who have in charge the uncapping job, in extracting honey. Then, unless exceedingly great care is taken, the honey secured is browned and no better than so much molasses. In fact, it is impossible to secure out of the capping-melter anything but an inferior quality of honey. For that reason we have discarded the capping-melter.

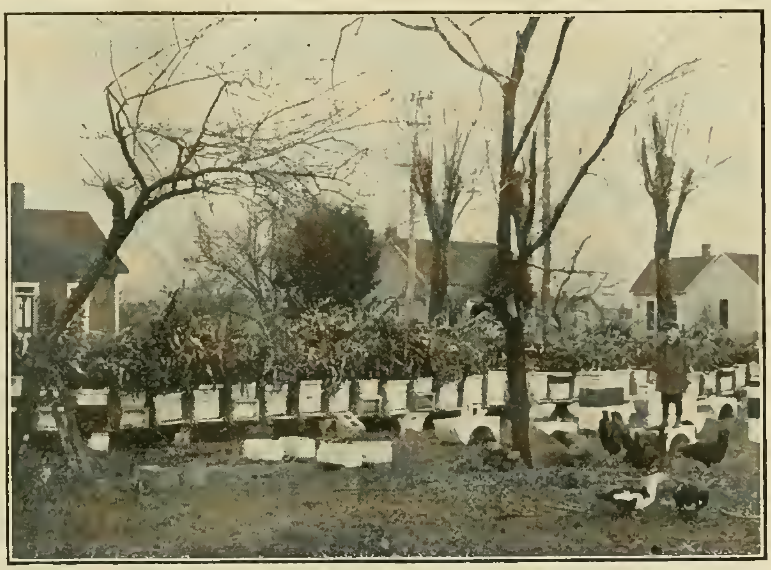
After a few days' work in extracting, the cappings contained in the capping can or other receptacle are transferred into a barrel or a tank having a screen a short distance above the bottom, so that the remaining honey may drain out. When the crop is at an end, all the cappings are removed and placed into a large boiler with water, which is heated only enough to soften the mass without melting it entirely. Our boiler is sufficient to hold several hundred pounds of cappings.

When the water is warm to a point where it is still possible to work the cappings with the hands, say about 130 degrees, they are stirred so as to let the water permeate them well. Immediately afterwards they are lifted out and put into a small handpress, in a clean cloth or sack to keep any of the wax from being lost. Pressure is applied to remove the sweetened water. The cappings are then set aside for rendering into wax, with a fresh lot of water.

The quantity of water used in washing cappings should depend entirely upon the amount of sweetness left in them when the operation is performed. This is difficult to determine. But it should not worry us. If the sweetened water is found too sweet for vinegar, more water may be added; if too weak, a little honey diluted in it will soon bring it to the proper strength.

Perhaps the reader will ask why we do not allow the cappings to melt entirely in the washing water. Our reason is that, in such a case, all the impurities become mixed with the water and it acquires an odor and a flavor which we do not like. When the cappings are just made lukewarm, although they color the water considerably and cause it to look dirty, we find that the small amount of color and impurities are easily eliminated after the process of fermentation.

To know whether the water is of the proper sweetness, after the cappings have been washed, we test it with a raw egg. It should float, showing above the surface a spot about the size of a dime. This will make strong vinegar. In fact, the sweetened water will make good vinegar if



GIVE YOUR BEES SOME SORT OF PROTECTION, IF IT IS ONLY A WINDBREAK OF CORN STALKS. APIARY OF H. O. BADER, BROWNING, ILL.

the egg is able to come to the surface at all, for quantities of honey varying from three-quarters to two and one-half pounds are used to make a gallon of vinegar of varying strength.

When your cappings have been washed in this way they will make wax that will not be sticky with honey. It is a positive waste to send to the foundation manufacturer wax that contains a proportion of honey. It has to be deducted and makes an unsatisfactory transaction for both.

Now, as to making vinegar. Remember that the first fermentation will be alcoholic. The more thorough it is, the better the vinegar that you will obtain. First, to kill undesirable germs, heat your sweetened water to the boiling point. Next, secure the proper fermentation, by the use of a little grape juice or apple juice, or in default of these, a little yeast. The temperature must be right, not less than 70 degrees. So the barrel containing the liquid should be kept in a warm room. In October an ordinary house cellar will be warm enough, especially if you have poured the sweet water into the barrel while it was still warm.

Do not bung the barrel, as fermentation would push out the bung or burst the hoops. A very good way is to put a sand bag over the bunghole to keep away insects.

In less than a week your liquid should have passed through the active alcoholic fermentation. Now put into it some acetic acid, either vinegar or what is commonly called "vinegar-mother." Give it plenty of air, for air is necessary to fermentation, while wines require a closed vessel, as soon as the alcoholic fermentation is over. If you wish your vinegar to be rapidly made, transfer it from one barrel to another and leave a space open at the top for the air. Manufacturers of the best vinegars of wine or cider, who want to cause quick acidity, allow the vinegar to trickle from one receptacle into another, through oak shavings. This causes the oxydizing of the liquid in great speed.

The acetic fermentation may be induced simultaneously with the alcoholic. But this yields a sweetish-sour vinegar which may be suitable for sweet pickles but cannot be called good vinegar.

If you wish to make an excellent vinegar, you should rack it—draw it off its lees—as soon as the active fermentation is ended. You may also help its quality by straining it before allowing it to ferment. If you wish to give it the taste of wine vinegar, add about 25 per cent of grape juice when first making it. Or you may give it the flavor of cider vinegar by adding apple juice in the same quantity. To merely start fermentation a nominal quantity of either grape juice or apple juice is all that is required.

Excellent vinegar, with a peculiar flavor, is made by the addition to it, at any time before using, of a bunch of stems and leaves of tarragon (Artemisia dracunculus). Although this plant is not generally known, it is a fine plant for seasoning salads. It grows well in our climate and stands our winters well, for it is a native of Siberia and of the Caspian sea shores. We use it regularly in our salads and pickles. Tarragon vinegar has an excellent reputation among the dealers in fine food supplies.

A Valuable Record

By A. F. Bonney.

IT is sometimes of value to know meterological conditions in connection with ascertained facts about the bees, and for some years I have kept an accurate record of weather conditions. By referring to last summer's record, I find that the average morning temperature of June was but 55.5 degrees, of July 61 degrees; that June 9 there was a killing frost, that the rainfall for the summer was very heavy, 7.2 in June, and that the clover stand was something tremendous. In connection with the fact that I took off 180 pounds to the colony, extracted honey, the record is interesting.

To facilitate work, I use a lot of arbitrary signs. The temperature is preceded by the plus or minus mark, I use a small circle for clear weather, the same with a dot in center for fair, a cross in the ring marks cloudy, and the circle filled black means rain, while the amount of precipitation is recorded decimally, the air moisture (humidity) by the % mark and the direction of the wind in initials with the estimated speed in figures. Lastly, the amount of rainfall. Today's record would read like cut alongside.

I use a small book, 4x5.5 inches, and as there is more space than is needed for the record, I use it to note interesting things about my work. In this way I keep track of things which might escape my memory. Needless to say, a small blank book which may be bought for a dime will serve, and last the year out.

Buck Grove, Iowa.

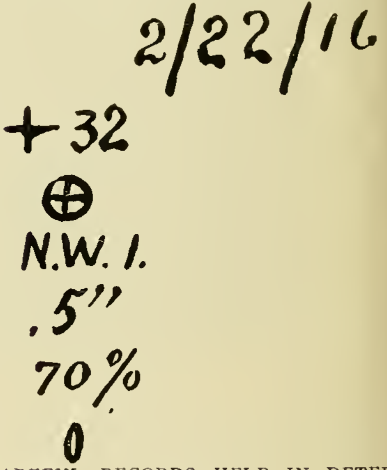
Plant Lice and Honeydew

By Dr. Burton N. Gates, Associate Professor of Beekeeping, Massachusetts Agricultural College.

THE current year, speaking for Massachusetts in particular but possibly for several of the other New England States, is a year of an unusual abundance of plant lice or aphids. Spring conditions, with cold and damp weather, were favorable to their propagation. Entomologists predicted a heavy aphis infestation. At the present writing, the middle of August, aphids for several weeks have been especially evident upon the potato. Entomologists have seldom noticed them so prevalent. This occurs widely throughout the State and also in Connecticut. So numerous is the pest that considerable damage is reported locally from the infestation. Numerous as it is, the writer has not observed any perceptible amount of honeydew produced by this species. Bees have not been seen working the aphis on the potato.

In fact, bees have not been observed generally collecting honeydew as might be supposed, and yet, periodically, the combs show the presence of a dark honey which is presumably of a honeydew source. The writer's observation is limited to the bees working on witch-hazel galls and on elms. Today, however, honeydew was found on the common milkweed, Asclepias syriaca; it occurs in great abundance, yet but one bee was observed working it. In some places the elms, it is reported, have dripped honeydew, affording abundant material for bees to collect. For the last few days, however, apparently honeydew has ceased in the combs, or perhaps the bees are too busy on smartweed, which has just come into bloom.

Besides the potato, other market garden crops have suffered severely from the aphis infestation. Celery is one plant on which the aphis are numerous; on the apple aphis is prevalent. Generally speaking, the market garden crops are all more or less attacked, yet aphids are specific in their foods and are not generally given to working various kinds of plants.



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CAREFUL RECORDS HELP IN DETERMINING CAUSES FOR WINTER LOSSES, ETC.

In total, this season, for Massachusetts and Connecticut, through information gained from entomologists, may be regarded as an aphis or plant louse year. Hence the beekeepers should determine whether the dark honey procured is of plant louse origin and hence honeydew. Some colonies will be found to work this material to the exclusion of floral nectar, while other colonies may skip the honeydew. Moreover, honeydew may be procured in one restricted locality and not in the adjacent district. No definite rule can be set down. The writer has just observed bees in a large elm, yet adjacent elms appear to have no attractive force for the bees.

Numerous inquiries have been received concerning the source of dark honey. From these scattered inquiries, apparently this year bees have procured honeydew in widely isolated districts of New England.

Not always is honeydew dark. It may be light when secreted, but with a "sooty fungus" growing in it, results in what appears to be a dark tar-like honey.

Amherst, Mass.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Annual Field Day of the Worcester County Beekeepers' Association

The Worcester County Beekeepers' Association held their annual field meeting on Friday, August 10, at the home of Mr. Clesson Merriman, School street, Leominster, Mass. Though the morning was showery, it cleared completely by noon and was beautiful through the rest of the day. The uncertainty of the morning, however, kept away many of those beekeepers who lived at a distance. There was an attendance of forty, who enjoyed the unusually interesting program and the kind hospitality of our host. After the basket luncheon, with which coffee and ice cream were served, a semi-circle was formed near Mr. Merriman's well-kept apiary, to hear the annual report of the Secretary and Treasurer and the special speakers of the afternoon. We were very glad of the opportunity to meet Mr. E. R. Root and listen to the extremely interesting story he brought us from the New York honey markets. Mr. O. M. Smith, of Florence, Mass., President of the Hampshire, Hamden and Franklin Beekeeper's Association, spoke with feeling and authority on "Giving the Bees a Chance." He was followed by Mr. Charles M. Stewart, of Johnstown, N. Y., New York State Inspector, who spoke on the same line. Dr. B. N. Gates, of Amherst, emphasized the importance of net weighting all honey packages, and afterwards demonstrated the proper opening and manipulating of a hive of bees, showing a mild case of sacbrood.

Most of those present had left by 5 o'clock, after a pleasant and instructive day.

JOSEPHINE MORSE, Secy.

Straining Honey

Those who produce extracted on a large scale need no instruction about straining it, but those who have not any bees, and especially beginners, may care to know how we strain our honey.

The little strainer that comes with the extractor, to be hung on the faucet, is fussy and mussy, and we threw it aside, using in preference the strainer devised by E. D. Townsend, editor of The Domestic Beekeeper, who is a successful producer of extracted honey on a large scale. We have a honey tank containing sixty gallons, into which the honey is poured as it comes from the extractor, a pail or two at a time. The strainer is put on top of the tank, so that each pail of honey is poured directly into the strainer.

The strainer is of simple construction. Supposing your tank is 25 inches in diameter, make a frame something like a picture frame, 25 inches square, outside measure. Then make a bag of cheese cloth into which this frame will enter easily. It may be two yards of cheese cloth doubled over and the two sides sewed up. Put the frame into this bag and lay it on top of the tank. Have two or more extra squares of cheese cloth and lay one of them on top of the strainer. Then when the one in use becomes too much filled with the particles strained out, replace it with a fresh one, and put the one used in cold water to be soaked out.

After the honey has stood in the tank a day or two it is ready to be drawn out into the containers.

A Profitable Side Line

Robert Liebner, of McGregor, Ia., is an Iowa farmer who has found beekeeping so profitable as a side line that he wonders why more Iowa farms have not small apiaries at least, just as nearly all have small orchards. Bees among the apple and plum trees on his farm have brought in $400 a year besides furnishing the family table with honey the year around. The wife has made a little business of her own, horseradish in "honey vinegar," that is so superior to ordinary horseradish that she has demand for all she can supply at her own price.

As the apiary and orchard are at the front of the farm and seen from the road the farmer and his wife have beautified it by planting a few rose bushes and other blooming shrubs in and around the stands and the fruit trees. Along the fence which separates the bees from the highway a wild grapevine has been made to form a pretty hedge, which also serves as a protective barrier to passersby from the bees.

FLORENCE L. CLARK.

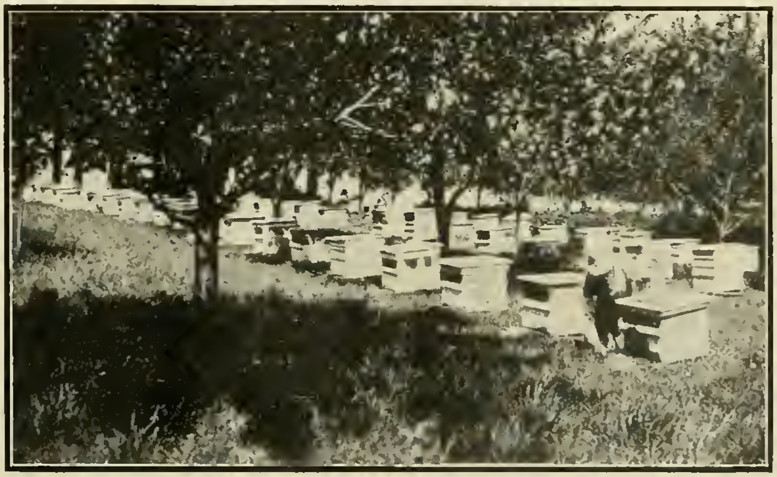
The Season in Northern Illinois

The season of 1917, at least up to the first of September, stands out conspicuous as perhaps the worst ever experienced at Marengo, if not throughout northern Illinois. We have suffered from too much wet and we have suffered from the drought. Until well along in the season we suffered from cold, even to a letting up in brood-rearing in some cases. White clover was not plentiful, and it is doubtful whether the bees got anything from the little there was. While basswood was in bloom the bees were busy upon it; but basswood trees are in small number.

Years ago Dr. Miller produced extracted honey, using one of the first extractors of the Peabody pattern, made by Mr. J. L. Peabody himself. This extractor differs from extractors now in common use, in that the whole thing revolves, can and all. Then sections were invented, and for many years Dr. Miller produced section honey. Two or three years ago we began extracting a little, using an up-to-date extractor, and this year all but four colonies were run for extracted honey.

When heartsease came into bloom all combs containing honey were taken off and all told we had about 12 pounds of extracted honey per colony. It has a somewhat nondescript flavor, being probably a mixture from several sources. But honey is honey this year, and we're glad to have any kind.

Of course, we are expecting something from the fall flow—beekeepers are always good expecters—but if the bees do no more than to lay up enough to provide their winter stores we shall not cry over it. If the worst comes we can feed sugar, which will be no great chore with only about 60 colonies; but honey is better for the bees. Then, too, we would like a lot



APIARY OF ROBERT LIEBNER, NEAR McGREGOR, IOWA. MR. LIEBNER IN FOREGROUND WATCHING A SWARM RUN IN.

of sealed combs to give to the bees next spring, for with 8-frame hives there is always need of more or less feeding in spring. Even more important in spring than winter it is to feed honey rather than sugar.

LEGAL SERVICE DEPARTMENT

"I have my bees in an outyard about six miles from here, but no one lives there. My brother-in-law goes there on week ends and I visit the place about once a week. An Italian family has been renting a farm for some years about a mile away. They have three very bad boys; they have been stealing my bees with the connivance of their parents, so I am told. I have sufficient proof to have them arrested, but the other ranchers in the neighborhood advised me not to because they say the Italian is liable to burn the ranch house and the apiary. The boys go at night and shake the bees into an empty box, and in most cases get the queen. I hate to move the bees to a new location, as it is hard to find good pasture." California.

Answer: Petty thieving is one of the most difficult things with which to deal effectively. Often the penalty is so small that the punishment does not amount to much even when a conviction is secured. However, it is usually a mistake to put up with this kind of thing indefinitely, and the better element of a community should be able to co-operate to such an extent as would make it so hot for the offenders that they would find it greatly to their interest to behave themselves.

As to just what action may be taken should be determined by local authorities. The matter should be brought to the attention of the proper officers without delay and residents of the locality should unite in taking such action as the officials advise.

"I would like to know whether there is any law to prohibit a man from moving bees, badly infected with foulbrood into a healthy locality in the same county, in California. We are overrun with foulbrood bees moved from about fifty miles in the same county." California.

Answer: Section 9 of the California law provides as follows: "It shall be unlawful for any person owning or controlling bees within the State, which are known to be infected with foulbrood or other contagious or infectious disease, to remove said bees to a new location, without first giving ten days' notice to the county inspector of apiaries, stating when and where he intends removing such bees."

Section 2 of the law gives the inspector ample authority to compel proper attention to diseased colonies. The law provides for the appointment of county inspectors on petition of ten resident beekeepers.

Note. Those wishing immediate answer to legal questions by mail should write direct to Frank C. Pellett at Atlantic, Iowa.

MISCELLANEOUS NEWS ITEMS

Western New York Honey Producers' Association.—The field meeting and basket picnic of the Western New York Honey Producers' Association, which was held August 11, 1917, at the apiary of J. Roy Lincoln, at Niagara Falls, N. Y., was quite largely attended considering the very busy season, beekeepers from all over western New York being present. Refreshments were served by Mr. Lincoln, and after dinner the crowd journeyed to the apiary, several hives were opened and honey removed. This in turn was taken to the honey house and put through Mr. Lincoln's up-to-date extractor, steam knife capping melter, etc.

The Secretary spoke on the "Use of Honey," also "The Food Value of Honey." It was pointed out that honey, even at 25 to 30c per pound, was much more economical to buy for the housewife than butter, eggs, cheese, meats of all kinds, oranges, bananas, milk and other staple articles of food, thus showing that honey should not be considered a luxury, but a staple food of high calorie content. Honey also has one advantage over all the other articles inasmuch as it will keep almost indefinitely, whereas other foods deteriorate very rapidly.

There was much discussion of the diseases of bees, especially the new one, paralysis, as members reported some. A beekeeper from Ohio told of the experience he had with it and recommended putting slacked lime over the bees every few days; this he claimed would hold it in check, at least.

Several new members were added to the association.

WM. F. VOLLMER, Sec'y.

Organization of the Virginia State Beekeepers Association.—Blacksburg is the seat of the Virginia Polytechnic Institute, which is also the State School of Agriculture. August 15, 16 and 17 the State Farmers' Institute was held under the auspices of the Institute. More than 1,200 delegates were in attendance and enjoyed a fine program. Dr. W. J. Schoene, one of the professors in the entomological department, being interested in bee culture, arranged a program with Dr. Phillips, of Washington, as the lecturer, and invited the beekeepers of Virginia to attend. Dr. Phillips found at the last minute that he could not be there and his place was ably filled by Dr. Geo. S. Demuth, of his department in the national bureau.

A goodly number of Virginians listened to his fine talk on wintering in this climate. He advocated the use of the packing case inclosing four hives and also the feeding of 8 or 10 pounds of good sugar syrup, to be stored next the brood-nest, and so consumed by the colony during the time in which they could not be expected to ordinarily take a flight. The syrup to be at least two parts of sugar to one of water.

After the lecture the State Beekeepers' Association was organized, with Mr. T. C. Asher, of Brookneal, as President; Mr. Cocke, of Danville, as Vice President, and Dr. W. J. Schoene, of Blacksburg, as Secretary-Treasurer. These three, and Dr. W. H. Dunigan, of Gratton, and Mr. E. G. Spane, of Church Road, constitute the Executive Committee.

The meeting then adjourned to the bee-yard, where Dr. Demuth demonstrated how to find a black queen that was hiding, and after she had been found and removed F. M. Baldwin, of Sanford, Fla., demonstrated the introduction of a queen by the smearing method. A fine queen that had been furnished for the purpose by Mr. Henry S. Bohon was immersed in about a third of a cup of honey, and after she had been well rolled around in the liquid she was poured down over the combs and the hive at once closed and the request was made that it be allowed to remain undisturbed for at least three days. The front of the hive was raised enough to prevent the honey from running out and starting robbing.

It was claimed for this method that it did not need an expert, that it was fool-proof and that it took less of the time of the bees than any other method. The statement was made that in recent introductions the fourth day had developed hatched larvæ.

Mr. Asher, of Brookneal, the new President, is an enthusiastic beekeeper. He has a farm a little way from the station at Brookneal and 500 colonies of bees in nine yards. He uses a motor truck in getting about and hauling supplies and honey. Last year, 1916, was a poor one with him and he fed up to May 17, last, when yellow poplar began to yield. Bees bred upon this and were ready for the sourwood flow in July. Cold weather in the spring and almost daily rains during the July flow cut this year's crop down to between 9,000 and 10,000 pounds for 1917.

This is mostly sold as chunk honey in ten-pound pails.

It is believed that the organization of this newest member of the great sisterhood of beekeeping associations means a forward step, with rich promise for the fraternity in this State.

West Virginia Organizes.—The Panhandle Beekeepers' Association annual outing and basket picnic, held at the home and apiary of Deputy Inspector Adam J. Yahn, Triadelphia, W. Va., August 22, was a successful and instructive affair in every way.

The morning was taken up with addresses by the different speakers, and at noontime Mr. N. E. Mehrie, of Charleston, W. Va., a moving picture man, began taking a moving picture of the crowd, which will show the many good things that were eaten, as well as the happy bunch that did the eating. From there he went to the bee-yard, where the film was added to by the handling of bees, taking of honey, putting on supers, uncapping and extracting, bottling and labeling; then cleaning and packing comb honey in shipping cases.

At this meeting the West Virginia Beekeepers' Association was formed. Nearly everyone present became members of the State Association, and the following officers were elected: President, Mr. T. K. Massie, of Hatcher, W. Va.; Vice President, Will C. Griffith, of Elm Grove, W. Va.; Secretary and Treasurer, Mr. Chas. A. Reese, of Charleston, W. Va.

The Board of Directors are as follows: Stephen Davis, of Morgantown, W. Va.; Grant Luzader, of Pennsboro, W. Va.; P. L. Jones, of Parkersburg, W. Va.; L. D. Sharp, of Slaty Fork, W. Va.; Adam J. Yahn, of Triadelphia, W. Va.

The State Association will hold a meeting this coming winter at Charleston, W. Va.

The Panhandle Beekeepers' Association will hold their next meeting in April, at Wheeling, W. Va.

The inspectors report very little foulbrood of either kind in the State, except in the Panhandle district, and some in Ohio county, but only one kind, the American.

The honey crop for the Panhandle section is very light. The crop down in the State will be about three-fourths of normal, mostly basswood.

The chief inspector and all of the deputies are clean-cut, wide-awake, enthusiastic beemen, and from now on West Virginia will be on the map as a State where they keep bees and produce honey.

W. C. GRIFFITH.

Iowa State Apiarist Appointed.—The Iowa Board of Education has recently announced the appointment of Prof. F. E. Millen, of Ames, as State Apiarist. Prof. Millen succeeds Frank C. Pellett, who served as State Bee Inspector for five years, and also has charge of extensive work in beekeeping as provided by the new law. All requests for inspection should be sent direct to Prof. Millen. The new law provides for inspection upon written request of one beekeeper.

Prof. Millen is well equipped for the work, having served as inspector of apiaries for the State of Michigan for several years.

Eastern Massachusetts Meeting.—The Eastern Massachusetts Society of Beekeepers held a very successful field day meeting on Saturday, August 11, at the Independent Agricultural School, at Hawthorne, Mass. (Danvers.) President S. Lothrop Davenport, Instructor in Horticulture at the school in the chair. In the absence of Director Smith, of the school, the address of welcome was delivered by Judge George B. Sears, of the District Court of Salem, an Essex county man and a beekeeper.

Addresses were made by Arthur C. Miller, on "System;" Prof. Burton N. Gates, on "Care of Honey and Containers;" Mr. Charles Stewart, of Johnstown, N. Y., Inspector for the State of New York on "Practical Beekeeping;" Mr. Frank Frisbee, Andover, Mass., President of the Massachusetts Society of Beekeepers, on "Container"; Mr. Ernest R. Root, of Medina, O., on "Present Prices and Outlook for the Honey Trade."

The meeting was called to order at 11 a. m. and adjourned at 5 p. m. There were 125 present. Letters were read from several members of our society who are in army service, and plans were partially perfected for the winter meetings, which will be announced later.

BENJAMIN SANDS.

THE FIRST MEETING OF THE WEST VIRGINIA BEEKEEPERS WAS AN ENTHUSIASTIC ONE

F. B. PADDOCK, OF THE TEXAS EXPERIMENTAL STATION.

Texas Honey Producers Meet.—The twenty-fifth annual meeting of the Texas Beekeepers' Association was held at the T. & M. College, August 2 and 3, in conjunction with the Farmers' Congress. The association unanimously voted to affiliate with the new co-operative organization and merge the two into one body to be known as the "Texas Honey Producers' Association."

Mr. Henry Brenner, of San Juan, Porto Rico, presented a carefully prepared paper on "Supersedure; Its Causes and Peculiarities." Papers on various subjects were presented and round table discussions held. The new business of shipping combless package bees was discussed in detail and demonstrations were made of how to avoid the dangers and enormous losses that many shippers suffered last season.

The fact was brought out by comparison, that Texas really has more of a winter problem—when judged by the percentage of loss—than States where cellaring is necessary. A request was made for the State Experiment Apiaries, soon to be established, to study this question particularly.

Mr. F. B. Paddock, State Entomologist, by the aid of carefully prepared maps, showed the present status of the foulbrood eradication work and gave an outline of its future.

Officers elected were, E. Guy Le Stourgeon, San Antonio, Tex., President; E. B. Ault, Calallen, Vice President; Alma M. Haselbauer, San Antonio, Secretary-Treasurer. It was the largest and most enthusiastic meeting of the association ever held.

Sweet Clover Utilization.—Farmers' Bulletin No. 820 of the Bureau of Plant Industry at Washington, by H. S. Coe, Agronomist, gives a very interesting detail of the value of sweet clover. In a comparative test made of rape, red clover and sweet clover for hog pasture, the resultant profit per acre was in favor of sweet clover. The actual cost of production of the weight increase being from 1 to 14 cents less per hundredweight with sweet clover than with the other pasture. If we add to this the large amount of nitrogen given to the land and the possible production of honey, we will find a great inducement to use sweet clover more largely.

No Honey in Italy.—Accept my thanks for your fine book, "First Lessons in Beekeeping." It is by far the best book for beginners in beekeeping that I have ever read. I am rearing queens with only 350 nuclei, being short of help, since my beekeeping helpers are now in the army. The orders for queens are so numerous that I could not fill them all, even if I had 650 nuclei. As for honey, we have a severe drouth. If it does not rain very soon we shall have a scanty crop. We were rather elated by the promising spring.

ENRICO PENNA, Bologna.

July 21, 1817.

Polk County Meeting in Iowa.—The Polk County Beekeepers' Association held their yearly meeting August 4, 1917, at Greenwood Park and had 25 new members join.

THE POLK COUNTY MEETING WAS WELL ATTENDED THIS YEAR.

The association re-elected C. L. Wright, M. D., President; C. E. Dustman, Vice President; Mrs. E. C. Scranton, Secretary and Treasurer. The President, in his address, told them that ordinarily their meetings were social and educational, but this year it was more, that it was patriotic, as they had dropped out their customary picnic dinner and gave $25 to the Red Cross Association.

The beekeepers have an opportunity to increase the food supply of our country, and thereby help feed the army and navy that have been called to defend our country.

Mr. R. H. Faxon, Secretary of the Des Moines Chamber of Commerce, made a very interesting and instructive talk on the beekeepers' opportunity and duty of increased production, and saving of all our food stuff.

Mr. J. W. Jarnagin, editor of the Iowa Farmer, made a splendid talk in increasing and saving on the farm and in the apiary.

Mr. B. T. Bleasdale, President of the Iowa State Beekeepers' Association, read a splendid paper on cooperation between the producer and the seller.

Mr. C. P. Mac Kinnen gave an interesting and instructive demonstration on queen clipping.

Professor Atkins, of the State Experimental Station at Ames, then gave a splendid lecture and demonstration on queen raising.

Dr. Bonney, of Buck Grove, Ia., made a nice talk on successful advertising and selling honey.

ARTHUR WRIGHT.

Northern Illinois Beekeepers to Meet.—The annual meeting of the Northern Illinois and Southern Wisconsin Beekeepers' Association will be held in the court house in Freeport, Ill., on Tuesday, October 16, 1917.

B. KENNEDY, Sec'y.

The Indiana Field Meet of the Northwestern.—The editor was present at the Indiana field meet at the apiary of Mr. E. S. Miller, of Valparaiso, on August 14. About 50 beekeepers were present. The general report from these men is unfavorable. No honey crop of any amount had been harvested by them, although where a fall flow is usual, the prospect was good, if sufficient rains are secured.

The meeting was exceedingly enjoyable, under the thick shade of large trees, next to the apiary. The visitors examined Mr. Miller's cellar, in which he has wintered bees for seven successive years with a loss of only four colonies in that time. The cellar is of concrete, walls and floor. Air is brought in through an 8-inch earthen pipe and introduced at the floor of the cellar, the vitiated air is also allowed to escape through a pipe placed in a flue at the opposite side of the cellar. Another opening higher up in the flue permits the escape of the warm air when the cellar is found too warm. Mr. Miller considers the temperature of 45 degrees the best. This is in line with the experience of many others.

The hives are piled in tiers of five. The dryness of the cellar secures as good conditions for the colonies at the bottom of each pile as for those at the top. Those who are accustomed to cellar wintering know that usually the colonies that are next to

GROUP IN THE A. & M. APIARY AT COLLEGE STATION, TEXAS—TEXAS HONEY PRODUCERS' ASSOCIATION MEMBERS.

the floor are less comfortable than those above, owing to dampness. Scantlings of 2x4 size are used under the bottom row. Each hive is brought in with its bottom-board, but care is taken to have the entire entrance open for ample ventilation. Mr. Miller's success makes his method worthy of attention.

Mr. Miller runs six apiaries, for extracted honey. His method for the prevention of natural swarming is quite successful, and is as follows:

At the time of the crop, all the brood-combs but one are transferred to an empty hive and the brood-chamber with the one remaining comb is filled with either empty combs or frames of foundation. A half-story super with built combs is placed above the brood-chamber over a queen-excluder and the hive containing the brood, with one more frame added, is put on the top. At the end of nine days the queen-cells that the bees may have produced are destroyed. All the queens are clipped.

As the question of foulbrood is of prime importance and as the State Entomologist, Dr. F. N. Wallace, and the State Inspector, Mr. D. W. Erbaugh, were both present, some very interesting talks were given on brood diseases. We were very favorably impressed with the methods and advice given by Mr. Erbaugh. He is evidently very practical. The consensus of opinion is that progressive beekeepers are becoming better and better able to cope with the different brood diseases themselves, as they become familiarized with the methods.

A novel way of putting dark honeydew to use was given by Mr. W. Horst, of Crown Point. Having a lot of this stuff which he felt disinclined to offer for sale, he conceived the idea of trying it as pig feed. He mixed it in small quantities with sour milk for the pigs and had the satisfaction of seeing them grow as never before.

There should be more of these field meets. Automobiles are enabling farmers to go without difficulty a distance of 50 to 100 miles to attend them. There were ten machines at this meeting.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Markets

Semi-Monthly Market News Bulletin
Honey—No. 6

Washington, D. C., Aug. 31, 1917.

This is the sixth of a series of similar reports which will be issued by this Bureau on the first and fifteenth of each month during the honey-shipping season. The information is secured by representatives of the Bureau located in the markets, and is transmitted to Washington by wire. For the present the bulletins will be issued only from Washington. These bulletins will be sent by mail free to any person requesting them. All inquiries should be addressed to Charles J. Brand, Chief.

Telegraphic Reports From Today's Markets—Jobbing Prices

(L. C. L. prices on large lots to jobbers).

Cincinnati—Five barrels California, 1 barrel Arizona, 10 barrels and 49 cases Kentucky, 15 barrels Georgia, 16 barrels Alabama, 1,790 pounds Ohio, arrived. Nearby receipts light. Demand good; market very strong; few sales, on account of high prices. Extracted honey: All sales in small lots; light amber, 17-18c per pound. Comb honey: Fancy white, heavy, $4.75 per 24 section case; No. 1 white, heavy, $4.40-$4.50. Following are asking prices: Southern dark amber extracted, 15c per pound; white orange, large lots, 16½c; small lots, under 300 pounds, 18c per pound.

Chicago—One car California, also small lots, mostly from Minnesota and Wisconsin, arrived. Fair inquiry. California extracted honey, light amber, mostly 13½-14c per pound. Stock from nearby States, best, mostly 13½-14c; some unripe, showing slight fermentation, 13½c. Comb honey: No. 1 to fancy, mostly 20c; a few sales at 18c. Beeswax: Yellow stock, 37-38c per pound; darker stock as low as 35c per pound. Letters from shippers in this section show the crop here to be almost negligible.

Minneapolis—Five cans Iowa and light local receipts of extracted and comb honey arrived. Small lots, Minnesota, dozen and two dozen cases comb honey, 20-22c per pound, mostly 20c. Amber, extracted, 10-pound pails, 13c per pound; 60-pound cans, 12c per pound.

St. Paul—One car California, 400 pounds comb from Wisconsin, 3 barrels Minnesota extracted, 2,500 pounds comb and extracted from Minnesota, and light local receipts. Minnesota comb honey, dozen and two dozen cases, 18-20c per pound; 60-pound cans, amber extracted, 9c; white, 10c per pound; 10-pound cans, 11-12c per pound. California and Wisconsin stock, no quotations. Indications are for heavier receipts next week.

St. Louis—Receipts light. Extracted honey, light amber in cans, 13½-14½c per pound; dark, 12½-13½c. Beeswax. Supplies very light; few recent sales, 36c per pound.

Philadelphia—One car California, 7 barrels Southern, 30 barrels Mexican, arrived. Demand limited, market fair. Southern extracted, slightly dark amber, 11-11½c per pound. California light orange in 5-gallon cans, and Mexican, no sales. Beeswax no sales reported.

Kansas City—Approximately 550 cases native Missouri and Iowa new stock arrived; old stock cleaned up. Demand and movement moderate; market firm. Native Missouri and Iowa: 24-section flat cakes, No. 1 white, mostly $4.55-$4.75; all sales in small lots. No extracted honey on market. Beeswax: approximately 300 pounds arrived; demand and movement slow; all sales in small lots; best mostly 40c per pound.

Denver—Approximately 21,000 lbs. light amber extracted and 2,500 cases white comb arrived. Demand and movement good; market steady. Quality and condition fine. Comb honey: 24-section cases No. 1, $4.05; No. 2, $3.60. White to light amber extracted honey, 14½-15c per pound. Beeswax: Receipts light; clean yellow stock, price to producer, 34c per pound.

New York—Five cars California, 8 barrels Florida, 55 barrels Louisiana, 217 cases Louisiana, 551 cases Texas, 186 barrels Cuban, 360 barrels and 30 tierces Porto Rico, arrived. Market quiet, demand slow; export demand has dropped off during last two dian, mostly $1.35-$1.50 per gallon. dian, mostly $1.35?$1.50 per gallon. California, $1.65-$1.85 per gallon. Beeswax:: 105 bags, 2 barrels, 7 cases Porto Rico; 1 barrel North Carolina arrived; demand and movement moderate. Yellow stock, 39-40c per pound; dark stock 36-39c per pound.

Note—Arrivals include receipts during preceding two weeks. Prices represent current quotations.

CHARLES J. BRAND, Chief.

Iowa Meeting in December.—The sixth annual meeting of the Iowa Beekeepers' Association will be held in the Chamber of Commerce Convention parlors, in the Shops building, Tuesday and Wednesday, December 4 and 5, at Des Moines, Iowa. It is desired that every beekeeper, or friend of the bee, make it his business to be present at the sessions. It will be a live meeting, with live wires on live subjects. For further particulars and a copy of the program as soon as issued, write Hamlin B. Miller, Secretary-Treasurer, Marshalltown, Ia.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

It is inferred that all readers have access to the book "A Thousand Answers to Beekeeping Questions." This will avoid duplication in answering, as the book contains answers to practically all questions ordinarily asked on beekeeping. Subjects not specifically treated, or which are not clear to the reader will be further explained in this department at the request of any subscriber.

Miscellaneous Questions

1. Is there any remedy to keep beemoth out of colonies?

2. How can I find a queen in a swarm of bees when they are issuing from the hive?

3. Who is the bee inspector for Missouri, and where does he live?

4. When is the proper time to take honey from the bees?

5. I have ten colonies and am just starting, how shall I take care of them?

MISSOURI.

ANSWERS—1. I know of no way to keep the beemoth out except by the bees themselves.

Keep your colonies strong, and the bees will take care of the moth. Italians are much better at it than blacks.

2. When the swarm starts out of a hive, keep a sharp lookout at the entrance and you may see the queen as she emerges, although you will often miss her.

3. M. E. Darby, Springfield, Mo.

4. Comb honey may be taken as soon as it is sealed over. Extracted honey may be taken when three-fourths sealed, although it is better to be left longer. Some good beekeepers do not extract till the close of the harvest.

5. There are lots of things you ought to learn, if you are to be a successful beekeeper, but if I should attempt to get them all in this department I'd have a row with the boss. But you can get more than I could give in many numbers by sending a dollar to the office of this journal for Dadan's First Lessons, or by getting some other good bee-book. It will be money in your pocket.

Doolittle Plan for Extracting

Would G. M. Doolitle's plan of "Management of Outapiaries" work all right in running for extracted honey? If not, what changes should be made? ILLINOIS.

ANSWER—I think the plan should work all right for extracted honey.

Uniting

What is the best method of uniting colonies this time of the year? VERMONT.

ANSWER—I don't think there's anything better than the newspaper plan. Put a single thickness of newspaper over one hive and over this set the other hive. The upper hive must be bee-tight, so that no bee can get out until the bees have gnawed a hole in the paper. Then the bees can get to one another so slowly that they will unite peaceably. I never knew any fighting of the bees, but in two cases I put a nucleus with a queen over a very strong queenless colony and the queen was killed. In such a case two thicknesses of newspaper is better. After a few days, perhaps 4 or 5, you can move any frames of brood in the upper story to the lower story.

Clipping a Queen's Wing—A Swarm With a Clipped Queen

1. When is the best time to clip the queen's wings?
2. When a swarm issues with a clipped queen, the swarm finding the queen with them, will they cluster, and how long?
3. What becomes of the queen if you cannot find her on the ground?
4. If you don't find her will the bees rear a new queen and swarm again?
5. How long would it be before they swarm again if you found the queen, put her and the swarm back in hive from where they came, and then cut out all queen cells?
6. How soon will you find a new queen in a hive that has just swarmed, so you can clip her? ILLINOIS.

ANSWERS.—1. Any time when it suits your own convenience after she begins to lay. There is little need of clipping her during her first season, as she is very unlikely to swarm; yet I generally clip a queen not long after she begins to lay. Early in the season, before any colonies think of swarming, each queen is found in the apiary, and those with whole wings are clipped; for a certain number of queens are superseded every fall, and their successors should be clipped before swarming time the next season.

2. They may return without clustering; they may cluster for a very short time, and they may remain clustered as long as if they had a queen.

3. She generally returns to the hive, but may be lost or get into another hive and be killed.

4. A swarm with a clipped queen is a prime swarm, and at the time the swarm issues a number of queen-cells are present, and the first virgin from one of these cells is practically sure to issue with a swarm if the old queen is lost.

5. Maybe the same day, maybe not for a week or more; in rare cases not at all.

6. She will be ready to clip in 10 days or more.

I want to start in the bee business with about two colonies. Is it a good way to get the hives first, then buy the bees by the pound, and how many pounds of bees would be required to a hive? How early in spring should I get them? What do you consider the best way? WISCONSIN.

ANSWER—If you get 2 or 3 pounds of bees with a queen in May, they ought to do well. It might be more profitable to get 5 pounds, and get a good crop of honey. If you can get bees in full colonies in your own neighborhood that might be better still.

Weight of a Swarm—Ants—Honey-dew

1. How much should a good swarm of bees weigh?
2. Do ants crawling in and out of a hive of bees do any harm? If so, what harm do they do? How can I keep them out?
3. Is it all right to take a part or all of the honey out of a super in the summer and put it back for the bees to fill again, if there is plenty of nectar coming in all the time?
4. Where do bees get honeydew? Will they gather it when they can get nectar? WISCONSIN.

ANSWERS.—1. Perhaps 4 or 5 pounds.

2. Ants in your region generally do little harm except to annoy the bees by their presence, making their nests for the sake of the warmth in parts of the hive where the bees cannot reach them, if there be any such place, as over quilts. There is, however, a large black ant that honeycombs the bottoms of hives, so that they crumble at a touch.

3. Yes, if you mean extracting frames; no, if you mean sections.

4. They generally get honeydew from the leaves of trees. I think they are not likely to gather it when better material is plenty.

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1. Early this spring I got a pound of bees from the South, which I put into an observation hive. These bees have grown into a nice swarm by now and I have transferred them into a 10-frame hive. Now the honey crop has been very poor and unless we should get a good fall flow I am afraid these bees will not have enough to winter on. How can I get them in good shape for winter? Can I feed them sugar-water to winter on, or must I use honey? When and how should I feed?

2. I intend to winter them in the second story of my creamery and have them fly out through a south window; have them in my office now, flying out through a south window. The upstairs of creamery will never be far below freezing at any time in the coldest weather. Will this be a good plan? I would not like to lose these bees, for they are pure Italians with a tested queen. ILLINOIS.

ANSWERS—1. Honey is the natural food for bees, and nothing else can quite equal it, yet thousands of colonies have wintered well on granulated sugar made into syrup. So, if you cannot get honey that you are sure is free from disease, feed sugar syrup. It hardly comes in the scope of this department to give instructions for feeding, which you should find in your bee-book; but I may say that if you feed any time before the middle of September you may feed equal parts of sugar and water, and it doesn't matter whether you mix it cold or hot, only the sugar dissolves sooner in hot water. As it grows later the syrup should be stronger, until just before freezing it should be 5 pounds or pints of sugar to 2 pints of water.

2. As a rule, bees wintered in a building as you propose, are not very successful. They may do well for you, but in your locality it may be safer to winter in a good cellar.

Ants

When last I examined my hives I noticed, in one of them on top of the inner cover, several large red ants. Are ants likely to do any harm, and how can I get rid of them? ILLINOIS.

yond annoying the bees, and are in the hive

ANSWER—They probably do little harm be- because of the warm shelter. When I had quilts or inside covers ants were troublesome, but for years I have had no inside covering, and ants do not trouble at all. There will be no trouble if there is no shelter where the bees cannot reach the ants. You may trace them to their nests, if their nests are not in the hive itself, and destroy them with gasoline.

Saving Extra Queens

I have a colony of bees that became queenless and workers were raising only drones. As there was no worker brood, sealed or unsealed, four or five frames were put in containing sealed and unsealed worker brood. Ten days or a week ago I found three queen cells on one frame and two on another.; three were sealed. How would you save these extra queens, with the intention of replacing the old queens in other hives with these young queens? FLORIDA.

ANSWER.—You can save the extra queens by putting each in its own nucleus to be fertilized. But it's doubtful if they're worth saving; for to rear good queens you should have in the hive abundance of young bees, and in the present case there are few or none of that kind, for no worker eggs have been laid for some time.

Queen Introduction

1. What causes the bees in a strong colony to drag out live brood in the nymph stage? The colony is free from moths, and has a good Italian queen. It has also abundance of honey and pollen and there is a good flow of honey going on.

2. I removed a hybrid queen lately and put a caged Italian queen in her place. Five days later I opened the hive and found several queen-cells started, also the new queen which they balled. I immediately drove the bees off of her with a thick cloud of smoke and closed the hive. Three days later I found all the queen-cells torn open and my new queen laying nicely. What was the reason they would not accept her at first? KENTUCKY.

ANSWERS.—1. It is possible that the colony has superseded its queen, and having now no young laying queen has no use for drones, and so is dragging out the contents of the drone-cells.

2. Nothing very unusual in the case.. It is common for bees to start cells upon loss of queen, whether they accept another or not, later killing the cells if the queen gets down to business. Quite often, too, it happens that bees ball their queen when disturbed by the opening of the hive, freeing her all right in the hive is closed, even if no smoke be given, as you did.

Bees in a Commotion—Dividing—Swarm Prevention

1. While amongst my bees, I noticed quite a commotion about one of my colonies; it looked as though a swarm would soon issue. but the bees did not fly away, but clustered at the entrance and at the front of the hive, and after a half hour, at least, all was quiet enough for me to look inside. My memorandum shows that on August 21 I discovered that that colony had swarmed and that I had destroyed as well as I could see, all queen-cells except one of the best. The commotion aforesaid occurred on the 28th following. On examination on that latter day I found one

queen-cell open at the end, showing normal exit, and also one queen-cell sealed. What explanation can you give of this?

2. In the spring, when a colony shows a prosperous condition, viz., is full of bees, I like to put on another full depth super, then order a queen from the South, which takes a week or ten days to arrive; then I divide, putting most all of the brood with the new queen on a new stand. In following out the above stated manner of procedure, I have an under current of belief that, instead of at once ordering a queen, it would be better to wait until the bees start well at drawing out the foundation. Would this not be a true indication that the colony, however strong otherwise in appearance, is really ready for division? What do you think of this?

3. Until recently I gave preference to the putting queen up, instead of the excluder plan; but lately I have inclined more to the latter, as it only requires a hive-body and an excluder. How about doing either one as late as September 1, or say two weeks previous? Might it not be like secluding a colony to a queen that the bees want to supersede, and put them in a way, probably, to go into the winter with an old queen that might die before spring?

PENNSYLVANIA.

ANSWERS.—1. It is quite possible that the commotion was caused by the queen taking her wedding flight. Of course, there is a commotion when the bees have their play spell, but you have too much experience not to understand that.

2. I think your idea is entirely right, that it is not wise to divide until the bees are in such condition that they will not only work upon foundation, but work vigorously upon it.

3. It hardly seems that there should be need of using either plan to prevent swarming so late as the middle of August; still it might be advisable in some cases. I hardly think there would be danger by so doing of forcing into winter a too old queen. Probably many queens are superseded as late as the middle of September.

Color of Races

1. What color are the working bees of the Caucasian race and what color is the queen? Would the bees do well in Iowa?

2. What color are the working bees of the Carniolan race?

3. What color are hybrids, and would these bees do well in Iowa? MONTANA.

ANSWERS.—1. About the same color as the workers and queens of common black bees. They ought to do well in Iowa, yet most beekeepers prefer Italians, if for no other reason than that Caucasians, like Carniolans, are great swarmers.

2. Very much like blacks, but the rings are more distinct, so that one is inclined to say they have whitish rings.

3. By hybrid bees is generally meant bees that are a cross between Italians and blacks. They may be without bands, and they may have one, two or three yellow bands. They are common in Iowa and do well there.

Nuclei—Old Combs

1. Would it be all right to ship a tested queen with a one-frame nucleus from Indiana or Iowa to the southern part of Minnesota at the beginning of the honey flow in the spring?

2. I have several hives of bees, but the combs are mostly drone-comb, so I intend to put them in new hives with full sheets of comb foundation in the spring as soon as the honey flow begins. Will the old combs be fit to sell? About how many pounds are there in a 10-frame hive (Hoffman frames)?

3. How do you prepare for the market old combs taken from a hive, and about how much are they worth a pound?

4. If I get a one-frame nucleus, with a tested queen, will it be all right to take it out in the apiary at noonday and put it on the stand of one of my very old hives, which I will remove, so that the hive with nucleus will get the field bees from one of my old hives?

MINNESOTA.

ANSWER.—1. Yes; but a larger nucleus would be better.

2. If your idea is to sell them filled with honey, they would not do for table use, but might be good for feeding bees. I'm not sure what ten Hoffman frames filled with honey would weigh. Perhaps as much as 75 pounds.

3. Only new combs are put on the market as comb honey. If you mean dry old combs, they must be rendered into beeswax before they can be sold. Editor.)

4. Too much danger; the queen might be killed.

Queens—Feeding for Winter

On July 12 I received an untested Italian queen, which I introduced to a colony after killing the old queen. Five days later I examined it and found they had accepted her, but no eggs were present. August 1 I again looked through it, but still the queen had not started laying. I removed her, putting her in a nucleus and introduced another queen, which they accepted. She is laying fine.

1. What was wrong with the first queen?

2. Will she ever be any good?

3. I received two queens from a dealer, both cages being tied together. They were piping continually. Were they virgins, or is it natural for them to pipe?

4. Could I winter three queens in one hive with screen wire division-boards, each department having three frames?

5. Do bees die when they sting; if not, can they sting again?

6. Do you think I should feed some sugar syrup for wintering, or leave the natural stores, which is from buckwheat, aster and goldenrod?

NOVA SCOTIA.

ANSWERS.—1. I don't know.

2. I don't believe there's one chance in a hundred that she'll ever lay.

3. Laying queens pipe as well as virgins, and some are great pipers. I suspect the nearness of the two queens increased the piping.

4. Yes; but instead of wire screen you had better have wooden partitions one-quarter to three-eighths thick. With wire screen there is danger of queens being killed.

6. Better leave the natural stores.

Jumbo Versus Langstroth Hive Body—Swarm Control—Honey House—Wintering

1. In the production of extracted honey would it not be a good plan to use the jumbo hive-body as a brood-chamber and the full depth super? The jumbo frame is about two inches deeper than the standard Langstroth frame, therefore one could use nine frames in a ten-frame brood-chamber, giving it about the same number of square inches of comb as eleven standard Langstroth frames. One could space the frames according to the needs of the colony and instead of the tenth frame use a dummy, which would make it easier to remove the combs. Do you not think that in using the full depth super one would not have as many supers nor as many frames to handle? In my estimation that and other advantages of the full depth super would more than counterbalance the disadvantages.

2. Which of the many hive covers do you prefer?

3. Do you prefer the unspaced frame to the others?

4. Is there as much danger of combs breaking down in jumbo frames as in the standard frame?

5. Do bees gather honey from the rock elm?

6. What are the main things to be observed in Dadant's method of swarm control?

7. What is the greatest number of pounds of extracted honey produced by one colony that is known?

8. Where can one get hold of some good honey-house plans?

9. I should think that honey could be put up in pint, quart and two-quart mason fruit jars for retailing in the neighborhood, because these jars may be used again for preserving vegetables, etc.

10. Will bees fly across a stream about 60 rods wide to gather honey?

11. What are the things that must be observed in indoor wintering, also outdoor wintering. WISCONSIN.

ANSWERS.—1. I doubt if you would like the deep frames for extracting. A strong reason for thinking so is that the Dadants, who are strong advocates of large frames in the brood-chamber, use shallow extracting frames. And the Dadants are no slouches at producing extracted honey.

2. I have never seen any more to my liking than the ones I use, two thin board surfaces with three-eighth inch air-space between, covered with zinc or tin.

3. I prefer self-spacing frames.

4. Properly made and managed, there ought hardly to be danger with either. If there is danger, that danger would be greater with the deeper frame.

5. I *think* they do.

6. Big hives, big spacing, and big super-room.

7. I think a thousand pounds was reported some years ago.

8. In back numbers of some of the bee journals.

9. Mason fruit jars have been used with satisfaction as conntainers for honey.

10. Yes.

11. More than I could tell if I should fill many pages. This department is intended as a supplement, not as a substitute, for a text-book on beekeeping, and if, on looking up the matter in your bee-books there is some particular point not clear, I'll answer about it the best I can.

Swarming—Supersedure

I have a swarm of bees (half Carniolan and half three-banded Italians) that I caught June 17. They filled their hive with brood rapidly and soon they had nine out of the ten frames full of brood in all conditions. I put on one super of sections and when they had that almost filled I placed another under it. They drew that out in good shape. A few days ago I thought they acted weak, so I overhauled the hive and found a rather small force of workers, many drones, much empty brood, a little unsealed brood, one queen-cell which had hatched and two which were about to hatch. Work was almost entirely stopped in the supers.

This is a first swarm thrown from a colony which I bought this spring, so I don't know the age of the queen.

1. Are those supersedure cells or swarming cells?

2. If swarming cells, how do you account for the unsealed brood?

3. If supersedure cells, how do you account for the lack of workers and so many drones?

4. When I looked into this hive about six weeks ago everything was going nicely. Would an old queen play out so abruptly and allow the working force to dwindle?

5. Would you advise taking away the supers entirely?

6. If they swarmed, what would be the reason, as they had two supers of combs drawn out and only partially filled?

7. The parent colony threw out two others. The last one I returned two or three times and at last it left entirely, taking all the queens with it. So I had to buy a new queen for the old colony. MAINE.

ANSWERS.—1. Perhaps the easier guess is that they were swarming cells. In reality there is no difference in the cells themselves, whether they be intended for swarming or supersedure, and the same set of cells may turn out one or the other, according to circumstances. A colony may contemplate swarming, start cells, and then a dearth comes, the bees give up swarming and supersede their queen. On the other hand, a colony may start cells to supersede their queen, when an improvement in the honey-flow may decide them to swarm. So in this case the question is rather whether the bees swarmed or not.

2. A queen generally lays up to the time she issues with a swarm, and the swarm issues about the time the first cell is sealed. In 7 or 8 days the first virgin will emerge, and about

that time the brood from the last eggs will be sealed. But bad weather may delay the issuing of the swarm a day or more, and if the queen lays during that delay it will leave unsealed brood after the first virgin has emerged.

3. Drones might be because of much drone-comb, but the rapid falling off in numbers of workers is more easily accounted for by saying the bees have swarmed.

4. One would hardly think so.

5. Better take them away, and return later *if* the colony becomes strong enough to work on a later flow.

6. Abundance of super-room is quite a factor in the prevention of swarming, but no amount of room in supers will prevent swarming if enough other conditions favor swarming.

7. It is possible that all the queens went with the swarm; yet one may have been left who was lost on her wedding trip.

Queen Rearing

I understand that to raise a queen one should use larvæ less than 3 days old, and since it takes 3 days for an egg to hatch into a larva, should the egg be taken for queen rearing? OHIO.

ANSWER.—Evidently you are counting that the age of a larva is counted from the time the egg is laid. The age of a chicken is counted from the time it is hatched out of the egg, and it's the same way with a larva. It's generally considered better to give a larva not more than two days old, and it's all right to give an egg.

Foulbrood Combs

1. Would it be safe to use combs taken out of a European foulbrood hive after they have been extracted?

2. Could those frames be used again after combs were cut out? VERMONT.

ANSWERS.—1. In an apiary where there is already European fouulbrood, I wouldn't hesitate at all to use such combs. They are likely safe enough in any apiary, yet in an apiary where Europeon foulbrood has not yet appeared I'd rather not use anything that ever had the disease within a mile.

2. I have used such frames after boiling them in lye.

Peas—White Clover—Vetch

1. Do bees get honey from peas? They work around the stem of the pea from morning till night.

2. When is the best time, in this country, to plant white clover for the bees, and how long before it will bloom after sowing it? Will it grow around waste places, and how high does it get?

3. Is vetch good for bees? Will it grow on poor land? At what time does it stop blooming? ALABAMA.

ANSWERS.—1. It not infrequently happens that nectar is secreted at the axils of the leaves, and evidently that is the case with your peas.

2. There is probably no better time than when the ripe seed falls, although it may be sown almost any time. Spring might be most convenient for you. It will hardly bloom to amount to anything until its second year. It will grow in waste places where there is sufficient soil, and may grow from 3 to 10 inches high.

3. Vetch is a honey-plant I know little about.

Queen Hatching—Sugar Feeding

1. How long after the egg is laid by the queen can the bees raise a queen out of it?

2. Do bees make comb out of sugar syrup?

3. How many pounds of sugar would have to be fed to a colony of bees to produce 10 pounds of it in the comb, first making the comb out of the syrup? ARKANSAS.

ANSWERS.—1. Any time within 6 days, or up to the time the larva is 3 days old, and perhaps still later, although it is doubtful whether as good a queen can be reared from a larva 3 days old as from one only a day or two old. I judge so from the fact that when bees are given their choice they prefer the younger larva.

2. Not alone; they must have some other material with it

3. I don't know; maybe 12 or 15, under favorable circumstances; and maybe 20 or 30 before you would get the first 10 pounds stored. But it wouldn't be honey.

Bee Primer for the prospective beekeeper or beginner. A 24-page pamphlet, finely gotten up, with illustrations. It gives a general outline of bees and beekeeping such as desired by the amateur. Two pages are devoted to instructions to beginners. Price, postpaid, 15 cents, or sent free with a year's subscription to American Bee Journal at $1.00,

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BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

CLOVER QUEENS—Pure Italian, untested, $1; tested, $1.60; no reduction; no disease.
J. F. Coyle, Penfield, Ill.

TESTED leather-colored queens, $2.00; after June 1, $1.50; untested, $1.00; $10 per doz.
A. W. Yates, 3 Chapman St., Hartford, Conn.

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FOR SALE—A splendid apiary of 100 colonies of Italian bees in 8-frame hives, in one of the best locations for quantity and quality of honey. No disease in this part of Nevada. Yard is fenced. There is a comb-honey house, extracting house on two levels, 8-frame power extractor, one h. p. engine. Have unlimited supplies, both comb and extracting. Price of bees, $6 per colony for quick sale. Hives will be left full of good honey. Other stuff, as much as desired, at bargain prices. Everything of the best and in good condition.
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FOR SALE—The Cloverdale apiary, fully equipped. This apiary averages 200 pounds per colony. Bargain for cash. Selling on account of military service.
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FOR SALE—Having been drafted, I offer for sale 25 colonies of bees in two-story 10-frame hives for 4¼ plain sections; combs all built from full sheets wired foundation, but three hives which are built from starters. Hives of Root and Lewis make and painted white. Bees will be ready for shipment after the fall flow. Hives will be heavy with honey and bees are all strong and healthy. Price, $5 per colony. Harry Brown, R No. 2, Jerseyville, Ill.

FOR SALE—25 colonies Italian bees in 10-frame dovetailed hives. My entire equipment of hives, supers and supplies must be sacrificed for quick sale. All in A 1 condition. Some new. Send for my list and photo of apiary.
C. H. Glase, 1331 Perkiomen Ave, Reading, Pa.

CAUCASIANS are Quinn's queens of quality. Foundation stock imported direct by me from Tiflis, where alone the pure gray mountain bees are bred in their original purity. Get the best; I have them. See A. B. J., May, 1917.
Chas. W. Quinn,
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FOR SALE—Ten or twelve colonies of bees and a lot of bee supplies. Write for particulars. Mrs. H. E. Horney,
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FOR SALE—1 to 100, strong 8-frame colonies extra fine strain Italian bees. $4 to $4.50 each; all free from disease, with stores for winter: Standard full-depth self-spacing Hoffman frames; all straight combs in new one-story single-wall hives, f. o. b. here
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WANTED—Carload or less lots white and darker extracted. State quantity, quality, packing and lowest price.
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RENDER your own combs and cappings without trouble or expense; make foundation for yourself and others easy. Address,
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WANTED—Car load or less lots White and buckwheat comb State quantity, grading, sections size and lowest price.
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WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
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WANTER—Beeswax at all times in any quantity, for cash or in exchange for supplies.
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WANTED—To buy, a quantity of dark and amber honey for baking purposes.
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WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
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HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
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FOR SALE—Clover, heartsease, No. 1 white comb, $3.50 per case; fancy, $3.75; extra fancy, $4.00; 24 Danz. sections to case, extracted, 120-lb. cases, 15c per lb.
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WANTED—Small lots off grade honey for baking purposes. C. W. Finch,
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WANTED—To buy No. 1 light honey, clover preferred. Write at once to Emil Strudel,
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WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
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WANTED—To hear from parties having foundation mills to sell, either new or needing slight repairs.
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E. Gressman, Hamburg, N. Y.

Crop Reports and Market Conditions

Reports on the complete crop for 1917 indicate that there has been a slight turn for the better since our last month's report. This is due, no doubt, to the fall flow, which has developed fairly well in most communities where a fall flow is expected, and also to the excess over last season in some of the western communities, notably, Washington, Utah, and some parts of Montana and California.

The September 1 crop report of the Department of Agriculture gives the average per colony yield over the whole country as 36 pounds as compared to 46 pounds in 1916 and 37 pounds in 1915. Possibly that average is a little high for this year, owing to the proneness of reporters to turn in failure of crops, whereas the large crop man is more apt to make full report. Possibly we have more than half as much as last year, but reports coming in here would not indicate that the crop is over 60 per cent of 1916, which would make about 28 pounds per colony.

The late flows in Florida and Georgia have been very good, those in Alabama and the central South poor, while Texas, which has had an extreme failure, may be a little better off in some localities. Most of the reports from there indicate that the bees are dying from starvation if not fed carefully, and that the crop will be negligible. California's later flows have increased that State's average so that they probably have as much honey as last season. In the central West the flow is small, but better than expected.

HONEY SALES AND PRICES

A very large percentage of the honey is being sold and shipped as fast as harvested. What was not contracted for at a lower price earlier is selling now on a basis of at least 12½ cents for white extracted f. o. b. producer's shipping point. We know of one car of white extracted which sold for 15 cents per pound, and many other lots which have brought the producer 13 and 14 cents.

In comb honey, sales of cars have been made readily at $3.25 to $3.75, according to grade. Many of the larger producers are holding or selling co-operatively and securing a price of at least $4.00 per case f. o. b., while $4.50 is no unusual price.

What honey is not sold is being held generally for a price of 15 cents for extracted, and some few reporters are asking 17 and 18 cents in large lots in 60-pound cans, with every indication that prices will not drop in the near future.

THE DEMAND FOR HONEY

Some parties report that sales are difficult at a price above 15 cents in 60-pound cans. However, the number of inquiries being received by producers and sellers show that the demand is very much above what it has been in any recent year. A large Southern beekeeper who visited here recently states that most of the cane syrup of the South has been exported, with the result that honey is having to replace it on the tables of the South, even at the present high prices of honey.

Wholesale grocers are selling much more honey than they ever did before, notwithstanding the fact that they are having to ask a much increased price.

If war conditions do not change greatly in the next two or three months we do not see how there can help being an extreme shortage in honey by holiday time. Foreign buyers are still active, though none that we know of are offering over 16 cents f. o. b. New York, out of which has to come freight and profits of the buyers. With the excessive ocean freights, this honey becomes pretty high priced by the time it reaches the consumer abroad.

One lot of honeydew, ordinarily hard to sell at 5 cents a pound, was offered to Eastern buyers at 11 cents per pound. The offer was accepted, but the lot had already been sold by the beekeeper.

CONDITION OF BEES AND PLANTS

As stated above, Texas bees are perishing where they have not been fed liberally, and are, therefore, not in very good shape. In many New York localities heavy fall feeding will have to be done. The same is true throughout the middle West, where the honey flow has been spotted; some honey extracted in some localities, but in most the bees will do well to have enough to winter on, and many should be fed soon.

Recent rains throughout the Mississippi Valley have helped save the clover from drought. It now looks as if the clover plants would go into winter in fairly good shape, which is all in favor of at least a partial clover crop in 1918.

INCREASE IN BEES

A remarkable thing in practically all reports is that though but few more bees were kept in 1917 than in 1916, there will be a very large increase in number of bees in 1918. Almost without exception, reporters are going to increase their holdings all the way from 25 to 100 per cent. Many will increase by division, many more by buying in box hives and transferring, but by far the larger portion expect to take the pound package route. It is to be hoped that conditions in the Souh next spring are more favorable to early shipment of pound packages. Many bees arrived in the North this year too late to build up and make much surplus. Others report excellent success, where shipments arrived by May 20.

HONEY AND BEESWAX

New York, Sept. 18.—As to comb honey, nothing definite can be said at this date. From reports we have been receiving, it appears that a fair crop has been produced in York State, but no prices have been established that we know of, and therefore, cannot make any quotations until the next issue. The same applies to extracted honey, and no prices seem to be established. Southern honey seems to be pretty well cleaned up, and shipments now are mostly in small lots, many grades selling at from 10c to 11c per pound. The second quality, such as light amber, is selling at around 8c to 9c, while very dark honey of rank flavor is not selling for more than 6c to 7c.

Beeswax is declining rapidly, and at present is not selling for more than 38c to 40c for choice yellow tock; darker for less.

Hiloreth & Segelken.

Ckicago, Sept. 18.—In regard to the honey market, it is just opening up. We had about 100 cases of small lots, just in, which sold from 18c to 20c per pound, and the market is quotable at these prices. In extract honey the market is from 14c to 14½c. Beeswax from 35c to 37c for the best grades. We look for high prices to prevail on honey the entire season. We sold about 8 carloads last year and expect to handle 10 cars this year.

Coyne Brothers.

San Antonio, Sept. 18.—Very little honey is in the Texas markets. The only carload offerings this year were from the alfalfa belt in the extreme western portion of the State. Prices in local lots have ranged (wholesale) from 10c to 12c for extracted. Very little or no bulk comb has been offered. Cotton surplus did not appear until September and prospects are not very flattering for more than 60 per cent of a normal crop.

Beeswax prices are 30c and 32c, trade basis, with very little offered. and a feeling of stiffness in anticipation of higher prices.

Southwestern Bee Company.

Denver, Sept. 18.—We are at present selling new honey *to retailers* at the following prices: No. 1 white comb honey, per case of 24 sections, $4.50; No. 2, at $4.00.

Extracted white, according to quantity, 16 to 18c.

We are buying beeswax at all times and are at present paying 34c cash and 36c in trade for clean yellow wax, delivered here.

The Colo. Honey Producers' Ass'n.
F. Rauchfuss, *Mgr.*

Chicago, Sept. 18.—During the past 30 days we have witnessed an active market, with light receipts.

Fancy comb has reached 22c per lb., No. 1 selling freely at 20c to 21c per lb., with few ambers offered, but bringing from 1c to 3c per lb less. Extracted clover and basswood blend of good body and flavor brings 15c per pound. Amber grades range from 1c to 5c per pound less, according to color, flavor and body. This applies to honey in tin. In barrels 1c per lb. less is the prevailing difference.

Beeswax is not active. but prices are ranging at from 35c to 38c lb., according to color and cleanliness.

R. A. Burnett & Co.

Kansas City, Sept. 15.—The demand for honey is somewhat limited at the high prices. Best comb honey is selling at around $4.50 per case of 24 sections, some selling as low as $4.25. Extracted honey is moving slowly at 15c a pound for light colored.

No. 1 beeswax is selling at 40c a pound.

C. C. Clemons Produce Company.

START RIGHT

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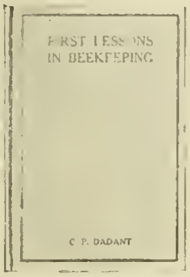
By C. P. DADANT
Editor of the American Bee Journal



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May save you many pounds of honey, many wrong steps. It would be worth dollars to you. Yet here you have a thousand of these questions answered in that latest of bee books

"A Thousand Answers to Beekeeping Questions"

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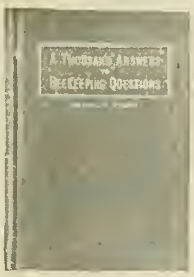

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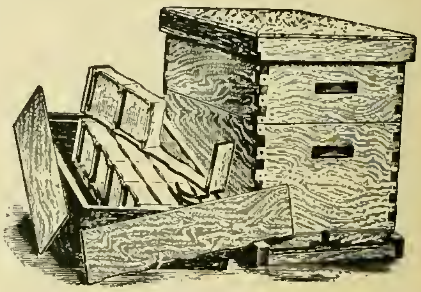
Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive**, and testimonials to this effect are received daily from those who are using this hive.



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PRODUCE WORKERS

That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey gathering, hardiness gentleness, etc.

Untested queens, $1.00; 6, $5.00; 12, $9.00
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Safe arrival and satisfaction guaranteed. Circular free.

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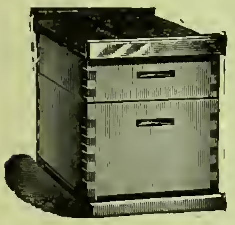

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For Comb Honey

We are prepared to make prompt shipments. We want you on our mailing list. Send for our catalogue.

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ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

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Untested queens, 75c each, 6 for $4.25; doz., $8.00; select tested, $1.25.

Package bees, $1.25 per lb. Including untested queen, $2.00 per lb Order early.

My package is light. Saves you bees and express. Prompt shipment; safe arrival and perfect satisfaction guaranteed. No disease.

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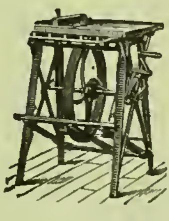

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HAMILTON, ILLINOIS.

VOL. LVII NO. 11

AMERICAN BEE JOURNAL

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NOVEMBER, 1917

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Return mail brings your Money"
The Fred W. Muth Co.

GET SERVICE LIKE THIS MAN

LAKE CITY, MICH., MAY 5th, 1917.

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We Want Immediately! Extracted Honey

We buy all grades of Extracted Honey. Large or small lots. Send sample and price. If price is right, we will buy. Partie who have Fancy and Number One Comb Honey write us at once. We will buy from 40 to 50 carloads this season.

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Send us your Beeswax. We pay highest market prices, and send you our check the same day shipment is received.

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Make some spare money from the wax rendered from your old comb. We will render it, charging only 5 cents per pound for rendering, and pay you best market prices for the wax rendered.

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We are prepared to ship you the same day order is received any number of shipping cases. Several carloads are here now ready for buyers. Send your order in now before our supply is exhausted. We sell Lewis Beeware.

REMEMBER We remit the same day your shipment arrives. Read the letter above and be convinced that this is the house to send your shipments to. Try us.

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"The house the bees built
204 Walnut St., Cincinnati, Ohio

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Price on	1 to 10 Queens,	60 cts. each
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"	100 to 1000 Queens,	48 cts. each

Safe delivery. If not satisfied, return Queens and get your money back. The Root Company, The American Bee Journal, Dadant & Sons, any mercantile agency, and others will tell you who we are.

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"First Lessons in Beekeeping," written by the editor of this magazine, is intended primarily for the use of beginners in beekeeping. You should have it. Price, postpaid, $1, or clubbed with the American Bee Journal, one year for $1.75.

American Bee Journal, Hamilton, Ill.

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will undoubtedly be answered in the new bee book, "Dr. Miller's Thousand Answers." For beginner and veteran alike. Not intended to replace other bee books, but to supplement them. Price, postpaid, $1.25, or with the American Bee Journal one year, both $1.75.

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We have a fair stock of light amber and amber honey. Write for prices.

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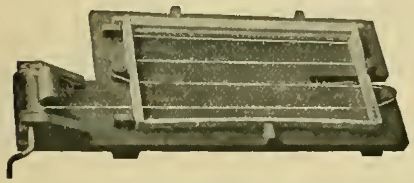

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Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

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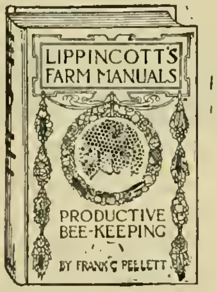
THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for Circular and Price List.

BEN G. DAVIS,
Spring Hill, Tennessee.

Productive Beekeeping

By FRANK C. PELLETT



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A Practical Book for The Practical Bee Man

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Hamilton, Illinois

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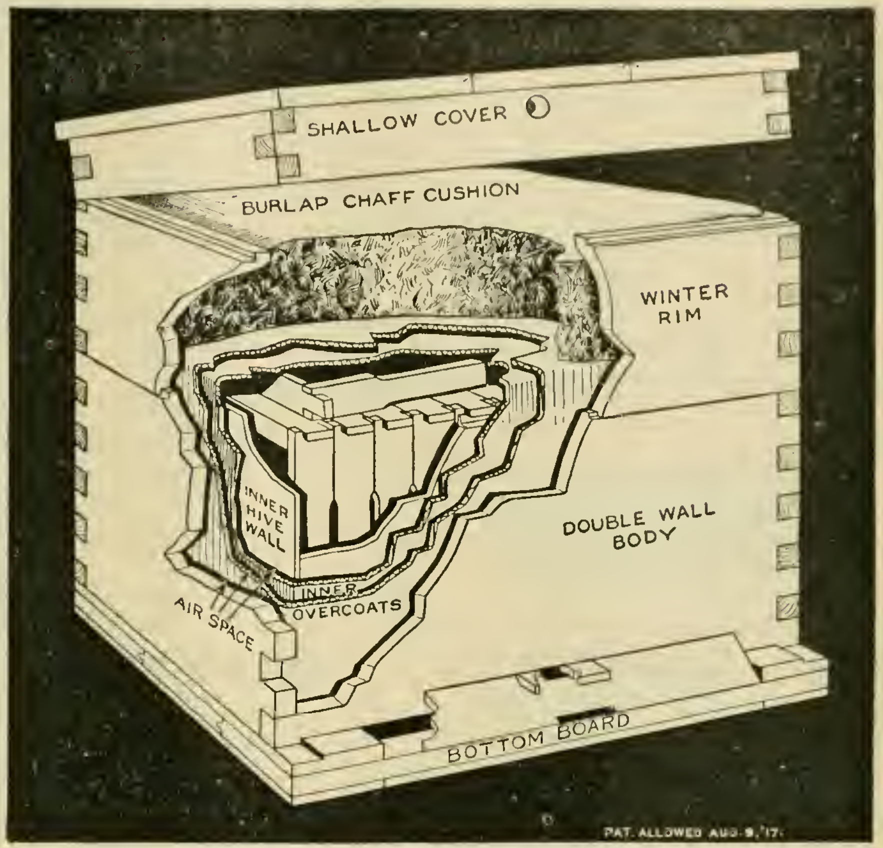
New Protection Hive



The Hive with an Inner Overcoat
Wintered 100% perfect in 1916-17.

WINTER PROBLEM SOLVED

The same dimensions as formerly. The construction now is such that a bottomless corrugated paper box can be telescoped down over the brood-nest, in between the outer and inner hive-walls, as a matter of insulation or protection when preparing them for winter. The work of preparing the bees for winter with this system is a joy. In spring the boxes are removed and stored away in the k. d. flat. A new circular with large illustrations will describe all. Send today for one.

A. G. WOODMAN CO., Grand Rapids, Mich.

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YOU WILL MAKE A MISTAKE if you do not ask for our **Low Prices on** Friction Top Pails and Cans. We are **Saving money** for car load buyers and others of smaller lots. Why not you?

Our three-year contract is enabling us to make prices considerably under general market quotations. Let us hear from you, specifying your wants.

Friction Top Tins

	2-lb. Cans	2½-lb. Cans	3-lb. Cans	5-lb. Pails	10-lb. Pails
Cases holding	24	24	---	12	6
Crates holding	---	---	---	50	50
Crates holding	100	---	100	100	100
Crates holding	603	450	---	203	113

A. G. WOODMAN CO., Grand Rapids, Mich.

THE GUARANTEE THAT MADE "Falcon" Bee Supplies Possible

The "Falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "Falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer always a customer," is synonymous with the name "Falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "Falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

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HONEY WANTED HONEY

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C. H. W. Weber & Company

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45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested.........	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	9.00	$ .75	$ 4.00	$ .75
Select Untested..	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested............	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested....	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1.50; 2 fr., $2.15; 3 fr., $2.75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year

Select queen tested for breeding, $5.00

The very best queen tested for breeding, $10.00

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because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.

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Price of 1,000 gummed, 35c.

American Bee Journal, Hamilton, Illinois

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The Fruit Grower......................	.50
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Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill.

Preparing for the 1918 Trade

Twenty-one years of Select Breeding gives us Bees of Highest Quality and Vitality.
Largest Packers, Shippers and Queen Breeders in the South.

1500 Colonies of Bees and 1500 Nuclei

10,000 Pounds of Bees ═ Annual Capacity ═ Italian Queens, 15,000

SAFE ARRIVAL AND SATISFACTION WE GUARANTEE

M. C. BERRY & CO., Hayneville, Alabama, U. S. A.

Special Prices on Five Pound Friction-Top Pails

For a short time only, and in order to reduce stock to make room for Bee Supply cars, we offer special prices on Five Pound Friction-Top Pails, in lots of 500 or more.

Price per hundred, $7.50,
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DADANT & SONS, Hamilton, Illinois

A Neat Appearance

makes many sales. A large amount of first sales today are made on the appearance of the object desired. The public wants something attractive. In attaining this appearance for your product, the container you use and its labels are of prime importance. Our booklet of

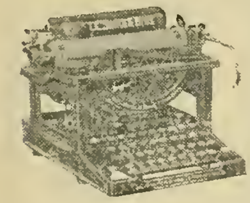
HONEY LABELS

contains many distinctive designs. Appropriate ones used on your product should bring you more sales than cheaper and unattractive ones. Your second and repeat sales, of course, will be based on the quality of your product.

Write today for our book of honey labels specially designed to fit the uses of the beekeeper who intends to increase his local sales of honey, both in tin and in glass.

IT IS FREE.

American Bee Journal, Hamilton, Illinois



$2.50 A MONTH BUYS A VISIBLE WRITING **L. C. Smith**

Perfect machines only of standard size with keyboard of standard universal arrangement — has Backspacer — Tabulator — two-color ribbon — Ball-Bearing construction — every operating convenience. **Five days' free trial.** Fully guaranteed. Catalog and special price **free.**

H. A. SMITH, 851-231 No. Fifth Ave., Chicago, Ill.

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C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Does the work in half the time. Has been tried and is guaranteed to do accurate work. Makes the frames ready in one handling. Price $6.50.

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

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**"I want tobacco just as much as bandages and socks,
So drop your contributions in my old tobacco box!"**

Send 25 cents and we will forward a "comfort package" of tobacco to some soldier or sailor at the front—enough to keep him in tobacco for a week. Or **send $1**—it keeps a fighting man happy for a month. Tobacco is the only thing that cheers the soldier boy through the dreary hours in the trenches. He'll probably send you a post card in ackowledgment—a war souvenir you will treasure. Send your "Smokes" at once—he needs them badly. Every cent contributed goes for tobacco to our soldiers and sailors abroad.

"Our Boys in France Tobacco Fund" 25 W 44th St.
NEW YORK CITY
Endorsed by War and Navy Departments

TEXAS QUEENS

Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

GRANT ANDERSON
Rio Hondo, Texas

Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

HOW ABOUT NEXT YEAR?

The season of 1917, just closed, has been a most unusual one. Beekeepers who did not fortify themselves early in the season by securing their hives, sections and other goods and having their equipment ready for the bees, found that when the honey season was upon them that they were up against the following conditions:

EVERYBODY WANTED BEE GOODS—DEALERS HAD DEPLETED STOCKS ON ACCOUNT OF THE UNUSUAL DEMAND—MANUFACTURERS WERE SEVERAL WEEKS BEHIND ON ORDERS—THEIR FACTORIES WERE WORKING OVERTIME, SOME BEEKEEPERS WERE DELAYED, SOME DISAPPOINTED, SOME GOT THEIR GOODS WHEN IT WAS TOO LATE.

Now, Mr. Beekeeper, what are you going to do about Next Season?

Prospects are favorable for a big demand for bee supplies next year. Profit by the experience of the past. Prepare! Order your goods this fall. Write us or our dealer nearest you for a list of new prices.

If you are not on our mailing list, write us at once and we will send you a catalog containing name of the distributer nearest you, and in this way you will also be sure to receive a copy of our new 1918 catalog when it is issued, which will be in January, as usual.

LEWIS

Hives and Sections and all other goods are made of the best material and are scientifically manufactured

OUR GUARANTEE

We absolutely guarantee that our goods are perfectly manufactured of the best material for the purpose. On examination, if our goods are not as represented, we do not ask you to keep them. Return same at our expense and we will refund your money, including any transportation charges you have paid. If you purchase our goods from one of our distributers, the same guarantee holds good, as we stand back of them.

REMEMBER, IN HARMONY WITH THE GENERAL CALL MADE BY THE PRESIDENT, ALL BEEKEEPERS NOW OWE IT TO THE NATION, IN ORDER THAT BEEKEEPING MAY FULFILL ITS HIGHEST OBLIGATION, TO REDOUBLE THEIR EFFORTS TO INCREASE THE IMPORTANCE OF BEEKEEPING AS AN AGRICULTURAL INDUSTRY WHICH CONSERVES A VALUABLE NATIONAL RESOURCE AND WHICH PRODUCES A NON-PERISHABLE, CONCENTRATED, WHOLESOME FOOD WHICH PLAYS A VERY IMPORTANT PART IN THE ENDURANCE OF ANY NATION.

ORDER YOUR BEE SUPPLIES EARLY AND ORDER STANDARD GOODS IN ORDER TO SAVE TIME AND ENABLE MANUFACTURING PLANTS TO ACCOMPLISH THE MOST IN THE SHORTEST POSSIBLE TIME.

G. B. LEWIS COMPANY

WATERTOWN, WISCONSIN, U. S. A.

Send for catalog giving name of distributer nearest you

AMERICAN BEE JOURNAL

Vol. LVII.—No. 11 HAMILTON, ILL., NOVEMBER, 1917 MONTHLY, 1.00 A YEAR

BEES IN NORTHERN MICHIGAN

A Day With the Beekeepers in the Raspberry Country of the Upper Part of the Lower Peninsula---By Frank C. Pellett.

Of Northern Michigan, the late W. Z. Hutchinson wrote, "Northern Michigan, the home of the huckleberry and the speckled trout, where the deer drinks from little sparkling lakes with pebbly beaches; where magnificent forests of beech and maple stretch away for miles unbroken; where still lingers some of nature's wildness—here is a region fast becoming a veritable paradise for the beekeeper. As the lumberman cuts away the grand old forests, the wild raspberries spring up in myriads, the blossoms of which furnish bee pasture that is simply incomparable."

There has been a great change in even the brief time since Hutchinson loved to spend his summers there. The lumberman has cut away untold miles of the "grand old forests" and the deer is no longer as plentiful as in former days, but the wild raspberries still grow in wonderful profusion, and the speckled trout still may be found in abundance in the little streams that course down the narrow valleys between the hills.

It was rather unexpectedly that the writer packed his grip and started for Michigan, and seldom has so brief a time been filled with more enjoyable experiences. If one had the time to loiter, he would find there a wonderful vacation country, where the fisherman's dreams all come true. He would be a poor fisherman who returned from Northern Michigan without a good fish story. However, our time was so limited and there were so many things to be learned about bees and honey that there was no time for fishing, even for an hour.

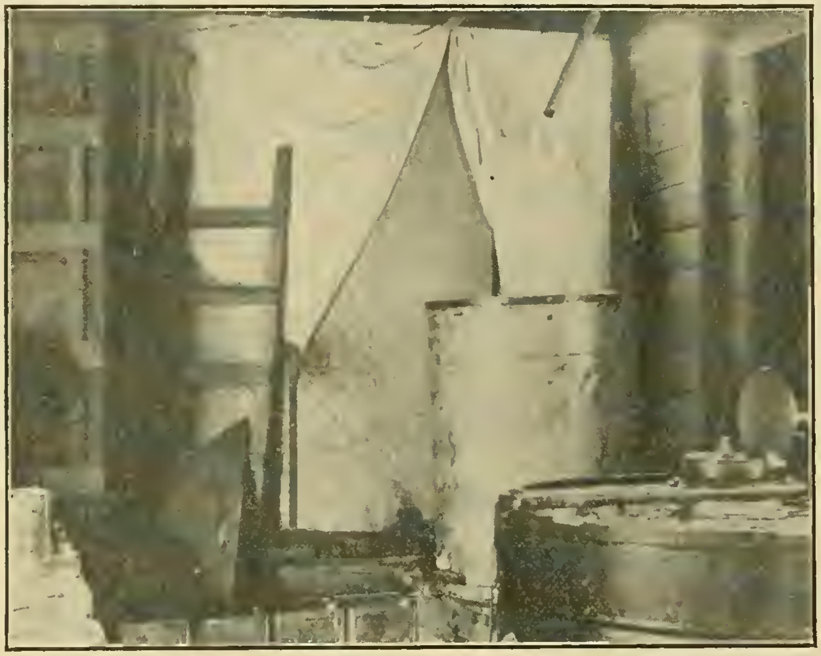
The trips to visit the beekeepers gave some splendid drives through the woods and beside the lakes. Everywhere, wild red raspberries were in such abundance that car loads of them might have been gathered, with persons enough to pick them. They were ripe just then, and a peep into a honey house showed big piles of cans of raspberry honey, or supers of comb honey from this source. When the hungry travelers sat down to a dinner of fresh fish, red raspberries and maple syrup, all natural products of the region, in addition to the usual abundance of fresh vegetables which the housewife provided, it was a feast fit for a king. Large fields of beans replace the fields of corn to be seen further south, but the orchards excel, in the abundance of their product, many far-famed fruit regions. Nowhere do cherries bear more freely, and fruit growing is rapidly becoming an important pursuit, in the region north and east of Traverse City.

There are three principal sources of nectar in this section. Next to the wild raspberry which is abundant everywhere, willow herb or fireweed and milkweed are abundant in favorable locations. At Bellaire, Mr. L. C. Gordon has one yard which yields a general average of fifty pounds of surplus honey from raspberry and as much from milkweed, annually. In addition, Mr. Gordon gets some honey from clover, although it is not

THE WAY MILKWEED GROWS IN NORTHERN MICHIGAN.

important, and a little from sumac. From the latter he gets just enough to color the honey as it comes from the extractor, as a rule. The sumac honey when stored by itself, he finds to be greenish but light in color and strong in flavor. Some buckwheat is grown in the country round about, but he finds it important as a source of surplus only about one year in ten. In his honey house is one big settling tank that holds 27,000 pounds, which makes it possible to keep the extractor humming without stopping to fill a lot of cans every few hours. At the time of the visit, fourteen thousand pounds of raspberry honey was piled up in sixty-pound cans, ready to be shipped to market.

The roads are splendid, and since they are all surfaced with gravel it is possible to drive right through, rain or shine, with an auto, without stopping to put on chains. Such roads give the beekeeper, with outyards and a car, a pleasure instead of a drudgery, as in days gone by.



GORDON'S BIG TANK HOLDS 27,000 POUNDS OF HONEY, AND IT TAKES A LADDER TO GET A PEEP OVER THE TOP.

To a man coming from the prairie country where milkweeds grow only occasionally, it is astonishing to see them in such abundance. It was August, and the bees were working busily bringing in honey. After seeing the fields covered with milkweeds, it was no great surprise to learn that as high as fifty pounds of honey per colony could be depended upon from this source. The State law requires that they be cut, but in some neighborhoods, where there is a large proportion of unused land, it is out of the question to cut them. However, milkweed locations are only to be found here and there; they are not so common as the raspberry locations. The man who has a series of yards in reach of both milkweed and raspberry has little reason to fear failure of the honey crop, as one or the other is almost certain to yield, and both are likely to do so.

Mr. P. W. Sowinski lives not far from Mr. Gordon and his honey comes from similar sources. After visiting beekeepers whose supers were empty in the clover region, one could hardly believe his eyes when he beheld the hives piled high and was assured that they were actually full of honey. Mr. Sowinski was hauling the honey from the outyard and getting it into cans as fast as one man could extract it. As already stated, most of the raspberry honey was already extracted and the milkweed flow was at the height. One of his yards is situated in a cherry orchard and the trees were heavily loaded with the finest cherries, which seemingly nobody had time to pick.

BLOSSOM OF THE FIREWEED.

Next to raspberry, Northern Michigan is famous for its fireweed, or willow herb. It was not until Boyne Falls was reached that willow herb in any quantity was seen. At that place live the Hubbard brothers, Fred and Roy, who are extensively engaged in the production of comb honey. They average from eighty to ninety finished sections of comb

ONE OF GORDON'S YARDS IS NEARLY HIDDEN BY MILKWEEDS.

honey from raspberry. No finer honey was ever produced than they were putting into shipping cases at that time. They have a very successful system of comb honey production, though their style of hives is not in general use. The particular thing which first attracts attention is their super-coaxer, which was described in the October, 1916, number of this Journal. It is a super of very shallow frames which is kept filled with honey all the time and never extracted. When the colonies are strong enough for supers, in spring, this coaxer full of honey is placed over the empty super and the bees rush into the super without delay. It does away with the necessity of bait combs or other bother. In case colonies are short of stores, these little supers of honey are always ready, and by placing one on top of a hive the job of feeding is done in a jiffy.

To give an idea of the way raspberries yield, their record of hive on scales for a few days in 1917 is copied here. This is an outyard, and there are blanks, from failure to visit the yard every day, as well as some rainy days when no honey came in.

July 5—Gain	12 pounds
July 6—Rain	
July 7—Gain	10 pounds
July 8—Gain	8½ pounds
July 12—Gain	6 pounds
July 13—Gain	9 pounds
July 14—Gain	6 pounds
July 15—Gain	0 pounds
July 16—Gain	13 pounds

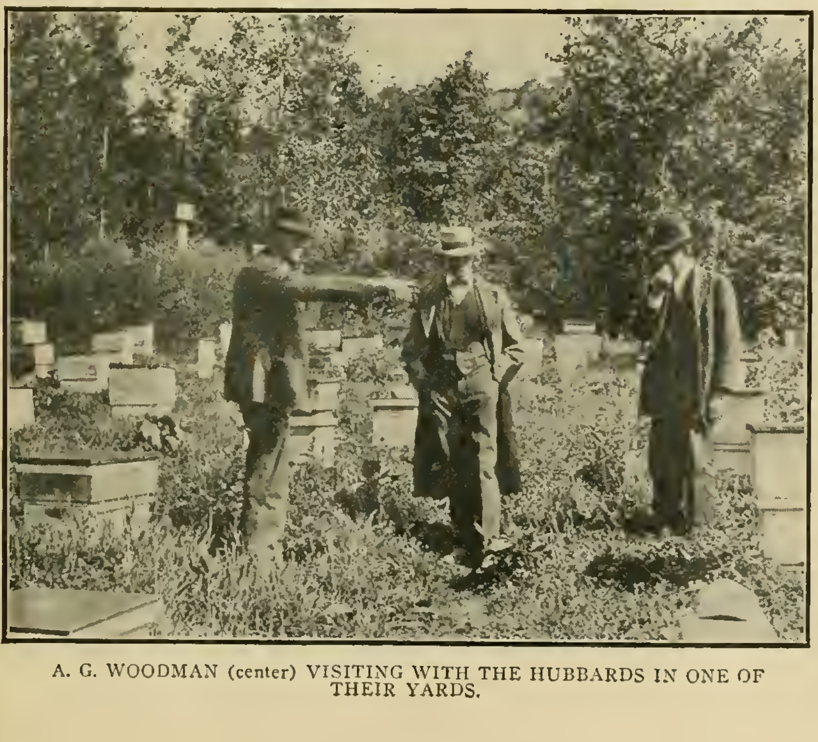
All around them is a vast region where the forest has been mostly logged off and but a small part of the land is in cultivation. The raspberry bushes are everywhere, even as they seem to be over most of the wooded country in Northern Michigan. Here also the fireweed grows in great abundance. However, fireweed is not dependable like raspberry, as it comes and goes. It frequently happens that a long period of dry weather in summer will so parch everything that it burns like tinder, once a fire is set. Forest fires burn over hundreds of square miles of country up there, leaving little but a blackened waste. Within a few days, following rains, the willow herb begins to show itself and soon the waste has been covered with a mantle of green. Because of this characteristic it gets its name of fireweed. The fire, of course, kills the raspberries to the ground, and there is no honey from that plant the following season. The willow herb grows plentifully for two or three years following the fire, when other vegetation gradually crowds it out and it is of less importance every year until there is another fire.

HUBBARD BROTHERS, OF BOYNE FALLS, WITH A STALK OF FIREWEED.

The willow herb grows luxuriantly, as will be seen in the picture of the brothers with one of these plants between them. It grows from three to ten feet tall and when in bloom is a pretty sight. When it yields they report that it is steady from about July 10 to August 15, and the surplus is very satisfactory. They have averaged as high as 87 pounds of comb honey per colony from this source. When, as sometimes happens, they get a crop from both raspberry and willow herb, they do very well, indeed. The honey stored from willow herb is water white, but has little flavor, being more like syrup than like the characteristic honey from clover or basswood.

They report the jewel-weed, or touch-me-not, in the bogs as attracting the bees in large numbers at times, and yielding considerable honey.

It is an enormous job to clean the supers and separators preparatory to putting in sections for a season's crop of comb honey such as they produce. They have hit upon the plan



A. G. WOODMAN (center) VISITING WITH THE HUBBARDS IN ONE OF THEIR YARDS.

of boiling the supers, separators and section holders, to remove the propolis. They come from the bath as clean and white as new. This saves much labor and the work is done much better and quicker. To eliminate the most disagreeable job connected with comb-honey production in such a simple way is a stroke of genius.

There are many extensive beekeepers in Northern Michigan and numerous localities are fully stocked with bees. But there is a vast territory where conditions are similar and where few bees exist. However, there are also numerous disadvantages. The forest fires are a constant menace, to the property, if not the lives, of the beekeepers in some sections; the winters are long and cold and snow lies until late in spring. The soil is sandy and underlaid with coarse gravel, which makes it unpromising as a farming country. The season is too short to grow corn successfully. The exclusive honey producer who likes rigorous winters is doing very well and no finer country can be found in summer. The man who is fond of fishing and hunting should enjoy life here to the full. Foxes are plentiful and bear and deer are still to be found in remote neighborhoods. Towns, roads and schools are surprisingly good and there is little to ask in these directions. The people are wide-awake and hospitable and as good neighbors as one could find. We cant forget the trout that Mrs. Gordon served, fresh from the stream, or the wild red raspberries and maple syrup that Mrs. Hubbard provided, along with such dinners as make one feel that it is good to be alive and on the road. The roar of the bees among the milkweeds still sounds in our ears as we close our eyes and fancy ourselves among the hills of Michigan. Such memories insure that no opportunity will be missed to go once again to the north country in vacation time.

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THE EDITOR'S VIEWPOINT

Our Cover Picture

Many beekeepers, especially beginners, do not think of the best place to locate an apiary till they consider for the first time the wintering of their bees. Our cover picture, which was used similarly in the American Bee Journal several years ago, represents an apiary which is ideally surrounded by buildings and shrubbery to serve as windbreaks for the sharpest winter winds.

Apicultural Experiments

Prof. R. L. Webster, State Entomologist, who has charge of experimental work in entomology in the Iowa Experiment Station, is planning some extensive experiments in beekeeping. Mr. E. W. Atkins, formerly experimental assistant to Dominion Apiarist Sladen, of Canada, has been selected for direct charge of the experimental work and has been at work since March.

Among other lines of investigation they are considering making comparison of the package bees from the south with wintered-over colonies to ascertain whether it is cheaper to buy bees in packages than to winter on natural stores. This will require several years' test to secure satisfactory data. A comparative test of the various races of bees in commercial honey production under Iowa conditions is also planned. Much objection has been raised to the Carniolan bee on account of excessive swarming and tests will be made to see whether this can be controlled by means of large hives and deep frames.

A careful survey of bees now in Iowa apiaries is under way and a comparison of the best colonies from apiaries in various parts of the State is being made. Measurements are taken of the tongues of workers from these best colonies. Tests already made have shown that bees making unusual showing have slightly longer tongues, as a rule. When the most promising colonies have been located it is the plan to rear queens in an isolated location where they can be mated to drones selected in similar manner. In this connection we would suggest that beekeepers with colonies that have shown unusual qualities correspond with Prof. Atkins with a view of furnishing a few workers for these measurements. Other experiments, including some special tests of hives in wintering, will be undertaken.

The beekeepers of Iowa are to be congratulated on the practical nature of the work which Prof. Webster and Mr. Atkins have outlined. The results of these experiments will be watched with interest.

Isle of Wight Disease

The British Bee Journal for September 20 gives a very gloomy view of the condition of beekeeping in England, in an article copied from "Nature." It says that "the mortality among bees which passes by the name of 'Isle of Wight Disease' continues with unabated severity and has now spread to nearly every district in England, destroying innumerable colonies in its progress and threatening to annihilate, or at least reduce to insignificant proportions, the beekeeping industry."

In the same number we find an article by W. H. White, strongly condemning the feeding of sugar to bees and claiming it to cause the disease, in the following words: "I am one of those who can see a connection between sugar feeding and the Isle of Wight disease, and the practice of stripping brood chambers of their honey, and substituting sugar syrup is worthy of severe condemnation. What sort of progeny can one reasonably expect from a queen which has been feeding all winter on an admittedly inferior food?"

A similar argument was extended a few years ago by our old and experienced friend, Ulrich Gubler, then editor of the "Bulletin," of French Switzerland. Numerous are the men who claim that sugar syrup is an incomplete and injurious substitute for honey. It must be acknowledged that, if we consider honey as safer and healthier for human beings than artificially made sugars, it must be also, and with greater probability, healthier for bees. But from this to the statement that sugar syrup weakens the bees so as to render them less immune to "Isle of Wight," there is quite a distance.

Again, in the same number of the British Bee Journal, we find a short article by W. J. Gibbs praising "bacterol," an anti-bacteria pharmaceutical preparation, which he uses by dissolving half a pound of sugar in a pint of cold water and adding two teaspoonfuls of the drug. He uses it to spray the bees and the combs every other day, and claims "complete success." A similar claim was already made a year or two ago by the use of "dioxogen," which is our "hydrogen peroxide."

Although the alarming extent of "Isle of Wight" in England is probably due in great measure to the moist climate of the British Isles, yet it behooves us to keep posted upon this matter, for we do not know what day this dread disease may cross the ocean. We have had something similar in the United States, but in no case has it reached the seriousness of the English trouble.

Meanwhile the disaster among the English apiaries is causing greater scarcity and higher prices of honey. It is to be regretted that the United States crop of honey is so much under the average this year, since some relief could be had across the ocean by active importations.

Artificial Fertilization

In our August, 1917 number of the Journal, we mentioned the failure of an attempted control of queen fertilization by enclosing queens and drones in a large glass room or hot house. In the present number the reader will find an article by Messrs. Howard and France, of the University of Minnesota, giving a faithful account of their experiments in forced fertilization and of their failure. This is interesting, and praise is due to the persistent efforts made.

The queen bee mentioned in this article as reported upon in "Science" in 1914, was wingless at birth. A photograph of this queen was sent to us at the time, not for publication. But since the matter has now been made public, we are not telling tales out of school in giving this photograph to our readers. The queen is readily perceived to be wingless and is large enough to show laying possibilities.

Whether or not the control of queen fertilization is ever to be successful, we cannot rely on the past experiences for a guide, except negatively. Those who claimed positive success were later shown to be unreliable. Accidental success has very probably been achieved; but until a positively successful method is found this question will have but a passing interest for the honey producer.

However, more wonderful feats have been achieved and perhaps some day an enthusiast will show us the way. The French say: Le mot "impossible" n'est pas francais. (The word "impossible" is not French). Neither is it American.

Wintering With Minimum Loss

At this time of year we have numerous inquiries from beginners as to how to winter bees with the least amount of loss. Many seem to think that wintering consists of properly sheltering your bees so as to keep them from "freezing."

As a matter of fact the first process in successful wintering should have been begun several weeks ago, and that was to make sure that all colonies were headed with young and vigorous queens and had a large number of young bees together with plenty of good stores. With these three prime requisites the loss will be cut down half, even where bees are in very exposed places and have little or no protection.

Other factors which tend towards successful wintering, provided you have those above, are a good, tight hive, proper windbreaks, and additional winter packing if necessary.

Whether it is advisable to winter inside or outside is a question which must be decided by each individual beekeeper. As time goes on favor seems to grow towards outside wintering, with additional packing necessary to keep out the cold winds of winter.

In our own yards we aim, wherever possible, to locate apiaries on a southern slope, so that the contour of the land will make a natural windbreak. One of our apiaries, in the full sweep of the wind, shows the result of its exposure by larger losses. The necessity with it, therefore, is a superabundance of packing material which will offset the natural windbreak of the other apiaries and render it wind-blast proof.

Our Backdoor Neighbors

Did you ever read E. Seton-Thompson's "Wild Animals I Have Known," published some twenty years ago? If you did read it and enjoyed it you will enjoy reading "Our Backdoor Neighbors," by our friend and correspondent, F. C. Pellett.

Both of these men are naturalists who love outdoor life and study wild nature. Both know how to describe what they have seen in an interesting manner. Both acknowledge the help of their wives, who are evidently capable and literary women. But the former man writes of individual animals who have performed extraordinary feats and the hunting or trapping of them. His pictures, beautiful and interesting, are more or less fanciful, for they are only drawings.

Pellett describes the wild life he has met in his backwoods and how he became friendly to hawks, owls, bees, wasps, rabbits, squirrels and polecats. His narrative is accompanied with real photos of those animals, snapped at interesting moments, in most difficult circumstances. It is wonderful and delightful, besides being actual wild life.

A Book on Woody Plants

"Plant Materials of Decorative Gardening" is the title of a pocket manual, by Dr. William Trelease, of the University of Illinois at Urbana.

We have never seen a larger amount of information in so small a compass. The book has 204 pages and is of a size which will fit the pocket. It gives the description, keys, and scientific as well as popular names of useful and ornamental shrubs and trees, with an index and a glossary. The only thing that we would like to see added to it is cuts of the leading plants described. But it would then cease to be a "pocket manual." This book must be of great value to the student. It may be had of the author at $1.

Honey in England

In the British Bee Journal for August 30, Mr. J. J. Kettle speaks of honey in sections selling at 18 shillings per dozen. This is at the rate of 36 cents per section. He adds that those who work for extracted honey are "making a larger turnover." This is probably because they produce a larger amount of extracted honey than they would of comb. But the price of extracted honey, everywhere, is reaching closely to the price of comb honey. In our opinion this condition has come to stay. The only exception will be in the case of fancy comb honey put up in a fancy way.

HOW THE WOMEN WIN

Three School Teachers Who Have Become Very Successful Beekeepers

WE used to hear much about "woman's work" in days gone by, but we hear less about it every year, for the women are proving that they can do about anything that a man can do, and many things besides. By the time the great war is over, women bid fair to become so commonly engaged in work that we have always regarded as peculiar to men, that there will be no occupation that man can claim exclusively as his own.

So many women have taken up beekeeping that there is no longer any novelty attached to a woman beekeeper. The subjects of this sketch are not primarily of interest because they are women, but because they are successful and practical honey producers. The public is always interested in the intimate story of any successful person and to satisfy that curiosity we have endeavored to learn something of the history of the three most conspicuous figures among the women who keep bees on the American continent.

Of the trio, one is a Canadian and two are Americans. All three are educated, refined individuals, who would have made good in other callings had they chosen a different course. All three were teachers before they became beekeepers, and as such had occasion to develop a goodly degree of patience, which is a very useful quality in the apiary.

When Miss R. B. Pettit, of Georgetown, Ontario, decided to be a beekeeper she plunged in recklessly and bought a hundred colonies to start with, although she was without previous experience.

Miss Emma Wilson, of Marengo, Illinois, was getting on in the schoolroom and had no thought of anything else, when the doctor advised her that she must rest for at least a year. Doctors usually have their way, and so Miss Wilson decided to get as great a change as possible, and assist her brother-in-law with the bees.

Miss Mathilda Candler, of Cassville, Wis., just naturally liked bees, and started with a few for fun. It is hard to imagine three similar careers with greater differences at the start, yet all have been successful, and beekeeping seems to be the chief life work of all.

Miss Pettit had lived in a beekeeping atmosphere for years before she contracted the fever. Her brother, Morley Pettit, had been for some time a successful beekeeper before he became Provincial Apiarist of Ontario, and it was to him she went for daily instruction after she had purchased her hundred colonies of bees. All day she worked among the bees, and at night sought her brother to tell him what she had done and learn where she had made mistakes. The season was not half over when an opportunity came to buy another apiary more than a hundred miles distant. If she took chances by buying a hundred hives when all the books say start easy, she was certainly reckless when she bought eighty more colonies so far away, after only a couple months of experience. With two apiaries so far apart it was necessary to anticipate conditions at one or the other for several weeks at a time. At the new yard she was dependent entirely upon her own resources, and the bee-books which she studied diligently. In the face of so many advices to start with not more than three or four hives, Miss Pettit should have made shipwreck of her venture the first season, but she didn't. At the new yard, a hundred miles from home, she secured an average of a hundred pounds of surplus honey per colony.

MISS WILSON IN HER BEE TOGS.

Next to school teaching, which she followed as a source of livelihood, Miss Candler's chief interest was in art, and she spent some time as a student in the Art Institute in Chicago. Her plans for finishing her art education in Paris were overthrown by the business failure of a relative which consumed all her savings. She returned to Cassville to her school and found rest and recreation with her bees. The number gradually increased until she had forty-nine colonies. In one year she harvested from these forty-nine colonies a crop which sold for six hundred dollars. This crop not only influenced Miss Candler to pay more attention to bees, but it started an epidemic of beekeeping in the neighborhood. Everybody went crazy about it, and decided that it offered a royal road to wealth. One large land holder shipped a carload of bees and located them near her apiary. As a result, nobody got much honey for a time, and it was not long until the carload of bees and equipment had dwindled to junk. Few of the fortune hunters stuck, and soon Miss Candler had the field to herself as before.

As soon as her bees could be depended upon to pay as much as she received for teaching, she abandoned the schoolroom entirely, and from that day has made the bees her sole dependence.

Miss Wilson went to her sister's home to find health by working in the open air, but she was too much of a student to spend her spare time in idleness. Beekeeping is a fascinating pursuit, and few who take it up, to the point of mastering it in its details, ever lay it down again. Miss Wilson read bee-books and bee-papers and argued with Dr. Miller

WHERE PETTIT HONEY COMES FROM.

MISS EMMA M. WILSON.

until she became so fully absorbed in the new work that she forgot her resolution to return to the schoolroom at the earliest possible moment.

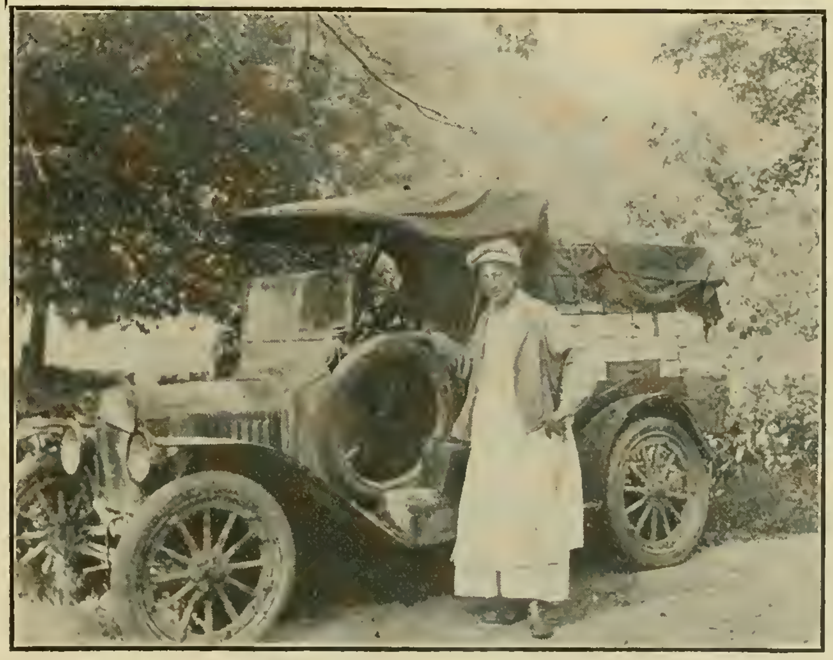
Those who have visited at the Miller home know without being told that Miss Wilson is a strong-minded individual, and not a mere echo of Dr. Miller. The two disagree about bees as often as any two of the rest of us, and in spite of the Doctor's wide reputation, I would as soon 'chance Miss Wilson's judgment as the doctor's. Ever since the writer had the good fortune to be entertained there he has been seeking a good excuse to go back again. With two such characters the stage is set for a whole bee convention when a third enthusiast arrives. Miss Wilson, through her association with Dr. Miller and her own writings for the journals, has long been known to the beekeeping world. Together they have developed what is probably the best system of swarm control for comb-honey production as yet given to the public, and by careful selection of their breeding stock have developed a strain of honey gatherers that is probably unsurpassed.

It was in 1913 that they produced the phenomenal crop which broke all known records of per colony production of comb honey, and made Marengo the center of attraction of the beekeeping world. Miss Wilson goes Doctor Miller one better as an advocate of being ready to make hay while the sun shines. The Doctor had long advocated having about seven supers ready in advance of the honey-flow in anticipation of a better crop than had ever been harvested. After the Doctor had assisted her to prepare the usual half dozen supers, with an extra one, Miss Wilson insisted that the season was promising a bigger crop than they had ever prepared for and insisted that he order some more sections. The good Doctor assured her that hers was optimism run wild, and that such a crop as she dreamed about had never been gathered, and that they would never live to gather such a one. At last he did order five thousand more sections, as he says, for the sake of his peace of mind rather than because he was convinced that they would be needed. By the time the new sections were ready Miss Wilson again insisted on more yet, so seeing that the bees were rapidly filling up the big piles of supers, as Miss Wilson had expected, he ordered another five thousand, and this time did not insist that it was entirely for the sake of his peace of mind. When the crop was off and it was announced that the average was about 266 sections per colony through the yard, the beekeeping world took off its hat to Miss Wilson and Dr. Miller, and the hat is still off, for no one as yet has approached their record. The Doctor credits most of this extraordinary result to the woman in the case, and we, who know them both, feel that she is entitled to a large share, since they have worked together for so many years that it is difficult to determine just which one originated any particular idea.

At the time of the writer's visit, Miss Pettit was operating 250 colonies in three yards. All were in easy reach by auto and she had her work so well in hand that she was planning extensions which have no doubt been made before this time. To avoid the necessity of overtaxing herself during the rush season she hires two boys by the year. She keeps them busy in dull times with work in the garden and in nailing up supplies or preparing the honey for market. The resignation of her brother from his official position, to engage in honey production in partnership with her, will no doubt materially alter her former system of management. Her honey in past years has largely been put up in small containers and sold to a retail trade. Miss Pettit's honey is widely known and much of her mail comes addressed to "Mr." R. B. Pettit, few of her customers knowing that R. B. Pettit is a woman.

Miss Candler now operates four hundred colonies in seven yards. With the help of one fourteen-year-old boy she has done all the work for the summer of 1917. She found herself deprived of skilled help at a critical time when it was too late to look elsewhere, and although there was more work than she liked to do, she proved herself equal to the emergency and kept things moving along as usual. Miss Candler counts on an average of about sixty-five pounds per colony of surplus, one year with another. Although it was a great disappointment to give up her dream of an artist's career, she has found a congenial occupation in the open air, and her bees have brought her many compensations, including financial independence.

Her crop this year may not have been as good as average, but she has learned the lesson which every successful beekeeper must learn—that the seasons will average one with another, and that in a honey dearth one must prepare for the flow which is to come.



MISS MATHILDA CANDLER BRINGING HOME A LOAD OF HONEY.

The Russian Oleaster a Valuable Overlooked Honey Plant

By L. H. Pammel.

I HAVE, on several occasions, called attention to the value of the so-called Russian Olive (Elæagnus hortensis Bief var Songorica Beruh) as a honey plant. The Russian Oleaster is a silvery, scurfy-leaved small tree with perfect yellowish flowers. The calyx is four cleft, the exterior side is scurfy, the inner yellowish. The Russian Olive, as it is called, should more properly be called the Russian Oleaster, as Dr. N. E. Hansen, of Brookings, South Dakota, has stated in one of his bulletins. The Russian Oleaster, known botanically as the var Songorica, was first introduced into this country by Professor J. L. Budd, because of its hardiness and ornamental qualities. The young trees branch freely and produce an abundance of white, scurfy foliage which makes it a most attractive and striking shrub. When the tree becomes older it loses some of its handsome character because of the divergent branches. It is one of the most fragrant of our cultivated small trees. The vicinity of these trees for some distance is rendered fragrant by their blossoms. The season of blossoming varies somewhat, but with us is about the middle or early part of June.

I wish to call attention to this plant because it is one of the best of our spring honey plants. The bees visit the plant in large numbers, when in full bloom from early morning until late in the evening. There is a place for this tree in large yards and it is especially desirable along roadsides. The tree is a rapid grower. I set a specimen in my yard in 1892. It now has a spread of 54 feet. The trunk is 18 inches in diameter, height of tree 35 feet. The tree might be cut now and made into eight fence posts. It is true the trunk is not very straight, but the fence posts are serviceable. I think the Russian Oleaster has great possibilities as a honey plant. I am somewhat surprised that beekeepers have not paid more attention to the use of this plant.

Thousands of trees were sent out by Professor J. L. Budd and wherever in the western country the tree is found the influence of the Professor of Horticulture is shown. I would advocate the planting of this tree extensively along roadsides in the Mississippi Valley, at least as far north as southern Minnesota and northern Iowa.

Ames, Iowa.

OLEASTER, COMMONLY CALLED THE RUSSIAN OLEASTER.

My Early Experience in Beekeeping

By B. A. Manley.

IN 1883 I commenced beekeeping with one colony of hybrid bees in rather a poor home-made hive after the Langstroth pattern. I added to this one by increase and purchase. Until two years later I had, I think it was twelve. I had very little time to give to bees. I was manager of a lumber, grain and live stock business, too. Of course, I did not permit bees nor anything else to take me away from my business.

One day in June, 1885, B. F. Woodcock, a friend of mine, and a very successful beekeeper, was in my office. I was getting all that I could out of him about bees. He had recently bought a dozen pure Italian queens and had them all in good condition. He said he could spare one of them. He had about fifty colonies and his farm work was crowding him. I bought one and a few days later he brought me in a fine colony of pure Italian bees. We took them down (three blocks from the office) to my home. Mr. Woodcock looked through my bees. I had one pure black colony. He said: "I would get rid of that black queen and give it this Italian queen and from that get new queens for all your bees." He gave me instructions as to how to do it. I at once transferred the Italian queen and did it without any mishap. How interesting it was to me to watch the blacks disappearing from day to day and the growth of queen-cells in the Italian colony. The result was eighteen colonies headed with queens the offspring of this one pure queen, all in good condition.

I did this with more business at the office than any one man ought to try to do. I did not permit myself to neglect any of it until I broke completely down. Twelve years ago I had to give up and closed out my interest in the lumber, grain and live stock business, and am giving my attention to beekeeping. I have 115 colonies in winter quarters.

I closed out my 1917 crop of 5,700 pounds of honey at good prices and could have sold much more. We don't need to get uneasy about the honey market. The consumption of honey is just beginning.

Milo, Iowa.

Distance Bees Fly

By Eric J. Outram.

ON reading your remarks in the February American Bee Journal about the distances bees fly, I thought you might be interested to hear that when preparing for the heather season last year, I found undoubted traces of heather honey in my hives, although the nearest heather to my house is four and one-half miles away. The heather country lies southwest from my home and about 150 to 200 feet higher level. As the prevailing breezes at that time of the year (end of August) are from the southwest, it is easy to imagine the bees beating up the wind while light and gliding down-wind and down-hill while loaded.

On taking the hives to the heather, we get an almost exclusively heather crop of rich, darkish, thick honey, very full flavored and of excellent medicinal qualities.

I have eaten large quantities of honey (mostly heather) this winter, more than ever in my life before, and this is the first winter I've passed since I was 16, without a dose of influenza, catarrh, or such bronchial troubles as flesh is heir to in an English winter.

I find your paper most interesting and instructive, although conditions are so totally different on your side the puddle from ours.

Later—Since writing my last letter to you, I have found another patch of heather nearer home, about a mile and a half away. This somewhat discounts what I said about the long flight of my bees.

It must puzzle some of you 100-hive men to hear us talk of "taking the hives to the heather." But in this part of the country the large majority of beemen are business or working men who run bees as a more or less paying hobby, and consequently large apiaries are few and far between.

Owing to recent ravages of disease, the "paying" part of the hobby hasn't been as conspicuous as might have been.

England.

These two letters are a good illustration of how easy it is to be deceived upon the distances traveled by bees. This question is of importance, since through it we are to decide how far apart our apiaries should be.

During our Texas trip I met beekeepers representing some 35,000 colonies of bees, and one of the questions I asked was: How far do bees fly for honey? L. B. Smith, a Texas apiarist, has written repeatedly that his bees worked by preference four miles or more from home rather than a mile or less. But the Texas apiarists were almost unanimous in saying that bees work and harvest honey mostly within a mile and a half of home.

In my New England trip, I made the same enquiry. Although as noted a beekeeper as L. C. Root, author of Quinby's New Beekeeping, and one of the foremost authorities, has found bees to go seven miles from home, to a hill covered with basswood; yet 32 colonies of his, carried to the center of this basswood yielded three times as much honey as those seven miles away.

Most of the practical beekeepers of New England and eastern New York seem to consider four miles a sufficient distance apart for apiaries and testimonials without end may be secured to prove that at four miles of distance the crops are often different both in quality and quantity.—Editor.

Mexican Bees and Beekeeping

By Pierre Provensal

THE Republic of Mexico stretches out over a space of 1,600 miles from north to south. It is 1,250 wide at its northern extremity and 130 miles at its narrowest point. Its area is 748,000 square miles, about four times that of France, or about one-fourth that of the United States. It could produce much more honey than it does produce and perhaps as much as the entire United States.

The first swarms of bees were brought from Spain by settling immigrants a few years after the conquest. Some think the priests were influential in bringing them over, because beeswax was necessary in the Catholic ceremonies. The fact is that the domesticated honeybee is still called in Mexico "De Castilla" and beeswax "Cera de Castilla."

These names qualify the difference between the domesticated honeybees and the wild bees and their products in Mexico, one variety of which is still appreciated because of the ocher-colored wax furnished by the latter, used in the manufacture of phonograph disks and other industries, cheaply taking the place of ordinary beeswax.

Since colonization times, we may say that beekeeping has made no progress among the common people. They still use the log gum, or a hive made of four boards nailed together. Those hives are not stood on end, but are laid down horizontally, in order that they be not knocked down by domestic animals. They are rarely protected in any way against the weather.

The honey is usually harvested twice a year, in September-October and in January-February, without much consideration between broodcombs and honeycombs, as the main object is beeswax, for honey is very little appreciated, although it is usually of good quality.

Among the educated classes many understand the possibility of progressive beekeeping, and modern apiaries are now being established by them as well as by French, Italian, American, Russian and Japanese immigrants. The years of civil war which have just elapsed have greatly retarded its development. Many apiaries have been destroyed, among which I will mention those of Mr. Gabriel Raimbault, established near Mexico City. One of these was devastated and the other burned by the Zapatistas. Since the beginning of national reorganization, beekeeping promises to attain an unexpected development, as it is inexpensive and fairly certain of success, matters which are important for people who have sustained severe losses in other industries.

An American writer, beekeeper and student, published in the April number of the American Bee Journal a map of the honey-producing regions of North and Central America. If the reader will refer to this map he will see that Mexico is comprised in part in the "tropical region," which possesses the richest flora and the most fertile soil in the world.

The topography of Mexico, happily, tempers in part the effects of its tropical latitude. The characteristic feature of the country is the great variety of its vegetation, which stretches from the most luxuriant tropical growth to the barrenness of the desert, from the plants and trees of the equator to those of cold countries. In a few hours the traveler who goes from Mexico City to Vera Cruz, by rail, after seeing the cereals of our northern countries, sees successively rice and sugar cane take the place of pines and oaks, or the palms and cocoanuts follow the evergreens of Siberia. This is due to the three very distinct zones.

The "hot lands" (tierra caliente) form the richest vegetable zone. Under the showers from a sky heated by the tropical sun, yellow fever reigns in an epidemic way, striking not only the newcomers but even some who are already acclimatized. Vegetation is luxuriant. Side by side with the high grass of the savannas, tropical cultures are found; sugar cane, cocoa, cotton, tobacco, palms, bananas; trees furnishing woods proper for cabinet work or dyes grow in tangled thickets, bound with climbing vines which hang to the right and the left like garlands.

The "temperate lands" possess a curious mixture of tropical and northern plants growing side by side, on account of the moisture produced by the melting snows of the mountains above. By the side of the pines the cocoanuts grow. The araucarias grow near the coffee trees of Liberia or Arabia. The cinchona, the pepper tree, the vanilla, the mango grow next to exotic shrubs such as the Japanese medlar. Rice and bananas are grown by the side of the European orange trees.

Even in winter, gardenias, camellias, oleanders, magnolias and azaleas bloom in perpetual spring.

The cold lands are less productive. This is caused less by the insufficiency of heat than that of moisture, which is more noticeable in the north, where the spreading apart of the two mountain chains prevents the production of moist clouds in these immense expanses.

This lengthy explanation of the climatic conditions of Mexico is intended by me to prove that properly installed apiaries would be supplied

APIARY OF PEDRO PROVENSAL IN URUAPAN, MICHOACAN, MEXICO. NOTICE THE BROAD ROOFS ON THE HIVES.

with bloom during the greater part of the year.

Another consequence of the climate would be the safety of wintering for the bees and as a result a greater honey crop. There is, however, a time of relative rest for the bees, extending from June to October. It is the rainy season. I say "relative rest" for the rain is not continuous; the forenoons are usually fair and towards the end of August a number of plants begin to bloom. But the crop does not become interesting till October, lasting with more or less success until the next rainy season.

The great development of beekeeping in the United States is bound to be carried into Mexico before long. The American interests will seek additional openings; apiarian conferences will be given; apiaries will be installed and will contribute to the development of a latent wealth which is not at present put to use. The example of the United States will probably also be followed in the creation of beekeepers' associations both for information and for profit, when the time comes.

Uruapan, Mexico.

Handy Sting-Proof Gloves

By A. F. Bonney.

WHILE working with bees, wearing the conventional gauntleted gloves, there are times when a person wishes to use his free hand or fingers, but cannot conveniently do so, at any rate without exposing his arms to the bees. With the tips of the glove fingers cut out stings are frequent, and the tips of the digits are very tender.

Have made a pair of gauntlets which will fit snugly around the wrists and above the elbows. Rubbers will be required. Extending beyond the wrist end have a couple of inches of soft cloth. When a pair of gloves is pulled over these gauntlets the wrists and hands are well protected, as well as the arms. One or both gloves may be discarded in a moment, and returned as quickly.

Bees will sting even through thin leather gloves, and often persist in their attacks until they will reach through thick cloth. To put an end to this, dissolve gutta percha, not rubber, in bi-sulphide of carbon. An ounce or more to the pint, according to the thickness of cloth. If the cloth is wetted in this and dried it will become impervious to the sting of the bee, while still very flexible. Care must be taken that the cloth does not touch in drying, otherwise it would be cemented together.

If a very thick solution of the mixture be made, you will have a cement which will patch leather so that it will last indefinitely.

Buck Grove, Iowa.

Wax Rendering

By F. W. Luebeck.

IN the September number of the American Bee Journal, G. C. Greiner gives his method of wax rendering. As Mr. Greiner finds it necessary to melt his wax three times to get best results, I will give my method, by which only one melting accomplishes the same result.

Our uncapping box is 12 feet long and holds the cappings of two days' extracting, so we can manage that the cappings are well drained before we have to make room. About the first of December I generally get time to melt them up. I do this work out of doors and select a day when it is too cold for the bees to bother. On two concrete blocks I lay two old buggy axles, build a fire, fill two wash boilers about four inches with water and put them over the fire. We are now ready to put in the cappings. As fast as they melt I put in more until the wax reaches within two inches of the rim.

Now I go into the honey house and rig up what might be called a "fireless cooker"; two 10-frame hive-bodies are set on top of each other, then some old newspapers are put in these about 3 inches high, then I set a 60-pound can with the top cut out on the paper. The space between the can and the inner sides of the hive-bodies are filled with old cloths. Boiling water about three inches deep is now put in the cans, a piece of board laid on top and all covered up with old carpets.

By this time the wax out on the fire will need some stirring. To get the nicest yellow wax it must never come to the boiling point. When all the wax, or nearly all, in one of the wash boilers is melted we carry the same into the honey house and set it close to the 60-pound can. We are now ready to dip out the wax. A dipper which holds a quart is used. A wire strainer should be inserted in the wash boiler to keep back the slumgum. I use an old Manum swarm catcher.

When the 60-pound can is full it is covered up. In about an hour the wax will be ready to dip into the forms. These forms are made of tin, are square, and hold 40 pounds of wax. If the dipping has been done carefully there will be no dirt on the bottom of the cake of wax after the latter has cooled.

When the wax has been dipped out of the wash boilers they are taken out doors again and are emptied, water and all, into a galvanized iron tank. I use an old novice extractor can for this purpose.

After all cappings are melted up I set the can with the slumgum on the fire and the wax which rises to the top is treated the same as the first.

In an average season I get about 500 pounds of wax from cappings, and I generally get through with the job in two days.

Knox, Ind.

Fertilization of Queen Bees

By C. W. Howard and L. V. France.

THE possibility of controlling the fertilization of queen bees has been in the minds of beekeepers for many years. From time to time it has been brought about under artificial conditions, the life of the queen being thereafter perfectly normal and in accordance with that of one fertilized in the usual manner. Several stories have come to the writers stating that the queen could be taken at the time she was leaving the hive, held between the fingers of one hand while the organs of a mature drone were pressed out with the fingers of the other and the mass of spermatic fluid which exuded dropped into the open extremity of the queen. Fertilization took place in an apparently normal manner and the queen was accepted by her colony and remained alive one or two seasons producing worker brood in large quantity. In the reports of the U. S. Department of Agriculture for 1885 and 1886 and of the U. S. Commissioner of Agriculture for 1887 are reports of various methods adopted in attempts to artificially fertilize queen bees. A large number of successes were claimed. The method followed was that described above and queens from one to fifteen days old were used. In the American Bee Journal, in November, 1878, appeared a report by Mr. J. Hasbrouck, in which he claimed to be able to cause queens and drones to mate when

THE PLAZA OF A MEXICAN CITY.

confined in small glass boxes.

This work done between 1885 and 1887 has been discredited. The possibility of accomplishing this feat was again broached by Professor Francis Jager in 1914 and the senior author was asked to co-operate in the work. In the number of "Science" for November 13, 1914, a preliminary report upon a successful case of artificial fertilization was published. Since that time the writers have attempted to repeat the experiment successfully, but have almost uniformly failed. The advantages, both to the practical beekeeper and to the student of genetics, if this could be done, are obvious and need not be detailed here.

The queenbee reported upon in "Science" in 1914 wintered in good condition, but soon after removal to the open in the following spring she began to lay drone-eggs as well as worker-eggs and finally produced exclusively drone-eggs. After this had continued for three weeks she was killed and the contents of the spermatheca examined. It was packed with live, active spermatozoa, showing conclusively that fertilization had taken place. If left alive she would probably have soon resumed the production of worker-eggs.

During the summers of 1915 and 1916, 55 duplicates of this experiment were carried out, making a total of 63 experiments. Of these, aside from the one already recorded, three were partial successes, the remainder were failures. Twenty-six queens died or were killed by the workers a few days after they were fertilized and before sufficient time elapsed to allow of egg production. The remainder did not lay eggs in sufficiently large quantity to ascertain the sex of the progeny or else the queens were killed and opened after a few drone eggs had been laid, and the spermatheca found to contain no spermatozoa.

The method followed in the operation was as follows: Being unable to secure successful manipulation by squeezing out the drone organs and allowing the spermatic fluid to drop into the posterior chamber of the female, we carefully dissected out the seminal vesicles of mature drones, using sterile instruments to mix the contents with a drop of sterile salt solution (0.75 gr. to 100 cc H_2O). In the later trials the salt solution was not used, its purpose being merely to dilute the spermatic fluid for greater facility in handling. During cool weather the instruments were kept warm. If the spermatozoa were inactive the material was discarded and a new preparation made. The queen was held loosely between the fingers of the left hand the posterior end upward. With the right hand a capillary tube into which the spermatic fluid had been drawn was then inserted into the Cursa copulatrix of the queen and the contents gently forced into the vagina by pressure from the mouth. The queen was then placed in a queenless colony and left under normal conditions except that a queen excluder was applied to the hive, between it and the bottom-board.

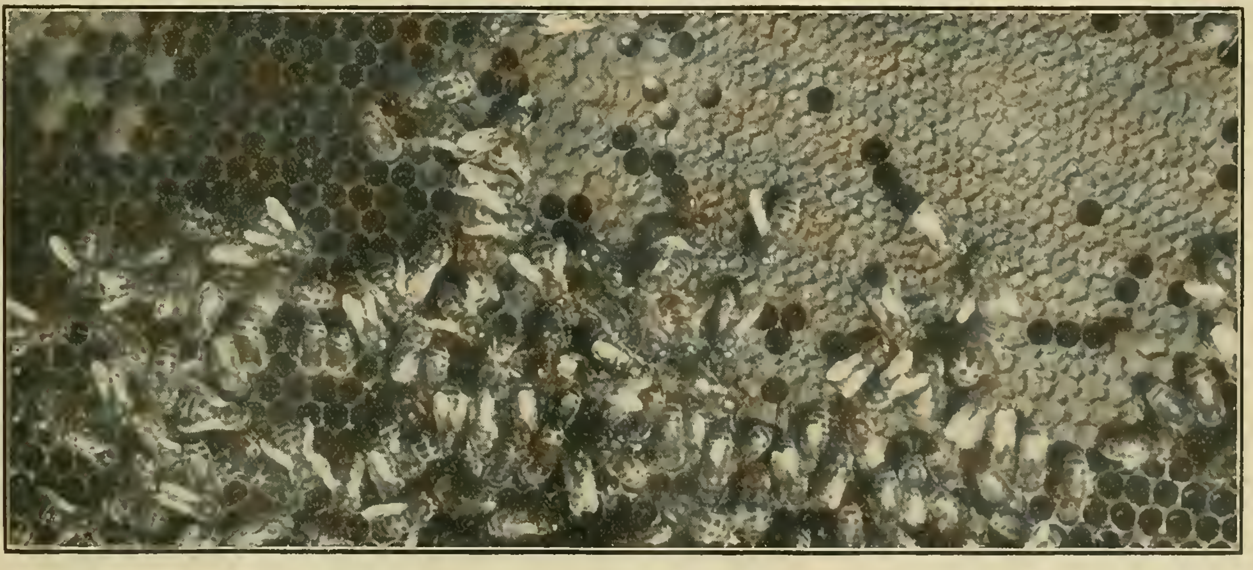
To prevent the possibility of natural fertilization, each queen was taken as soon as she emerged from the queen-cell and one or both pairs of wings clipped off. All drones were removed from the hives and a queen-excluder kept on. Queens were taken at all ages, varying from two to thirty-five days, although the majority were treated at the age of six to seven days. During 1916, practically all the queens were thus treated at the time when they were trying to leave the hive, apparently for the mating flight.

Only mature drones were used. Careful observations showed us that drones were mature and spermatozoa active when they were five to six day old, but most of those used were ten days or more of age and had had several flights.

Where queens laid eggs, from eleven to forty days intervened between the attempted fertilization and egg laying, with an average of twenty days. During 1916, whenever a queen attempted to escape from the hive for a flight she was re-fertilized. In this way some were operated upon two or three times, but still with no results.

The three partial successes were as follows: One thirteen-day-old queen was fertilized after the method described. After an interval of twenty-six days, although the abdomen was enlarged, no eggs had been laid and the female appeared sick. She was killed and the spermatheca examined. It was found quite full of spermatozoa. The second case was that of a queen whose age was not known at the time of fertilization. Seven days later she was found in the queen trap trying to escape from the hive and was re-fertilized. Several of her eggs produced worker larvae and five eggs were placed in queen-cells. All of these were capped over but robbers destroyed the colony, preventing complete observations. A third case was a six-day-old queen, which, after an interval of forty days, began to produce eggs, about 5 per cent of which produced worker-bees and the remainder drones. During the interval between fertilization and egg-laying she three times tried to escape from the hive, and each time was re-fertilized. It was only after the last attempt that her abdomen began to enlarge and she prepared for oviposition.

If this operation can be done once it would seem that we ought to be able to repeat it with successful results. This led to a closer examination of the female organs. Our observations agree with those of other investigators as to the existence of the S-shaped bend and muscular pump in the spermathecal duct. This probably prevents the forcing of the spermatic fluid into the spermatheca. There is undoubtedly a time or a natural stimulus which causes this valve to open and if the operation can be performed at this time the



THIS QUEEN WAS WINGLESS AT BIRTH AND GREAT HOPES WERE ENTERTAINED OF HER ACTUAL ARTIFICIAL FERTILIZATION fluids will enter. The problem is to find when this takes place. So far we have been unable to determine this point.

Our results would indicate that if the mating of queen bees is to be controlled it must be done in some other way than the one followed by us.

University Farm, St. Paul, Minn.

Argentine Ant

By W. A.Pryal.

CALIFORNIA had lots of good things, in fact, there were no bad features about the State, it may be said, until it became civilized. Don't understand me to intimate that the State has no good things now; it has, and "slathers" of them, but, as has been too often the case, the introduction of a better life has brought a corresponding lot of trouble. This we have seen in the islands of the Pacific, where the introduction of clothes, for one thing, has a fatal effect, so to speak, upon the natives. And in this country, as the natives were not able to live up to the ways of the whites, it rather caused them to cease living, as we know.

In bringing to our shores plants, fruit and merchandise from foreign shores, to cater to the modern wants of our population, we have, unfortunately, brought in a lot of evil. Leaving out maladies of the human flesh, when the dread microbe is brought in contact with it, we have numerous insect pests that came across the seas and are now doing irreparable damage to our crops. These pests were not purposely introduced, but smuggled their way here accidentally in importations of one thing or another. Thus we have what is called the San Jose scale, the great pest preying upon many fruit trees. It has been wrongly called after the fair California city, where it was first discovered in this country, when it should, I believe, have been named after China, from whence it came. And there are others.

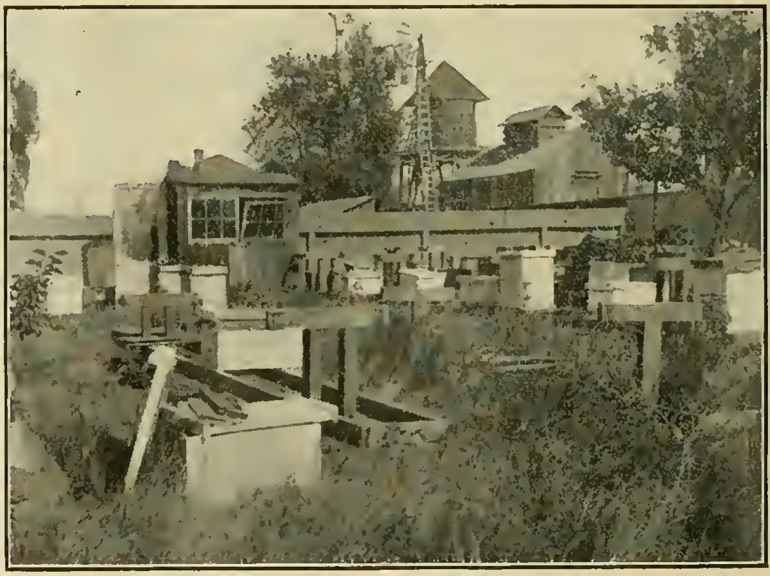
Yes, now we have the Argentine ant, which was brought here by way of New Orleans. It is overrunning the whole State and householders have a hard time fighting it, as it is far more of a nuisance than the common little black ant. They live without the house, usually in the earth. But if one gets into your house and finds food to its liking, it will be only a short time before there will be swarms of them in the pantry or kitchen cooler. This ant is smaller than the well-known black house ant; it is more lively, and is everlastingly foraging. It seems as if it is all nerves and its main duty in this world is to hunt food. When killed or "squashed" it does not emit a pungent odor, as does the common ant; an odor which makes the killing of the latter ant, about a beehive the signal for the bees to become irate and go pell mell for everything within reach and sting promiscuously.

I have found this formula for their extermination effective: One pound of sugar dissolved in a quart of water to which 125 grains of arsenate of soda is added. This should be boiled and strained, and when cooled used to saturate sponges, which are then set in the ants' runs. It is best to put the bait in empty cans that have small holes punched in them, so that only the little ants may enter. The poison is dangerous and should be kept out of the way of animals and bees. I have used one-half honey and one-half sugar instead of the amount of sugar above mentioned.

In a recent issue, the Rural New Yorker recommends this: "Equal parts of sugar and tartar emetic moistened with water, placed in shallow, small dishes, outdoors or in the house, will attract ants for two rods. They eat today and die tomorrow." This is a poison and care should be used, as with the arsenate of soda.

On a visit to Mr. J. E. Wing, a queen-breeder in Santa Clara County, this State, I wondered at the way he had his hives suspended. He told me the Argentine ants bothered the bees, especially in the queen-rearing hives. It was the first time I had seen these insects. Now they are common even where I live, near the Oakland-Berkeley line. Timbers 2x4 or 3x4-inch are set upright in the ground to the height of three or four feet and at distances apart to suit the weight that they are to carry. A cross piece of sufficient strength is nailed on to form a cross so that wire may be dropped from the end of each arm. This wire is then used to support scantling which carries the hives, as shown in the accompanying illustration. Care has to be taken that the hives do not touch the uprights or that grass or other obstructions do not come in contact with the carrier or its freight. The "scaffold" is simple and effective. I presume something should be done to "offensive" the wires, else, should the ants find their way down, they would soon be coming in droves. These ants are the greatest foragers of the ant tribe, and if there is food about they will soon find it, if it is accessible. So, beware.

Oakland, Calif.



CIRCUMVENTING THE ARGENTINE ANTS.

Sweet Clover in the Northwest

By R. A. Morgan.

I STARTED in the bee business in the year 1870, in Buffalo County, Wisconsin, and since that time have had all the ups and downs of the business. I feel now that beekeeping has emerged from that narrow field of activity into its real sphere. This change has come to stay, and I am going to point out one of the causes, at least.

In 1886 I moved from Wisconsin to Dakota Territory, and for ten years the honey I got was a mixture of dandelion, milkweed and goldenrod. White clover was unknown here and alfalfa was in its infancy.

In 1890 a young man by the name of Thomas Chantry came to Vermillion from Iowa. We talked over the honey problems of this northwest. Mr. Chantry suggested introducing sweet clover into this region. We decided to try it from Sioux City northwest toward Yankton.

We sowed the seed along the roads at night. Sweet clover was considered a noxious weed by some of the farmers, but there was one man, M. L. Mikelson, who had 600 acres of land near Meckling, South Dakota, who stood up for sweet clover. He declared it to be the best forage and honey plant known. He was to do our experimenting, Mr. Chantry was to sow the seed and I was to try to make myself heard. I talked with the editor of the Dakota Farmer and was informed that the bee business had not advanced enough as yet to be worthy of consideration. So I wrote a few articles for the Poultry Journal of Mitchell, South Dakota, and later for the Dakota Farmer.

In 1907 I visited Washington, D. C., and while there called on Dr. Phillips and talked the matter over with him, but as the colleges had not yet awakened very few knew the value of the plant. I told the editor of the Dakota Farmer that I had for him something worth one thousand dollars. He said "Go home and write that down and send it to me and I will place it in the center of a page with lines all around it," and he did so. It was, briefly, how a farmer could make one thousand dollars in one year by sowing sweet clover on forty acres of his land, whether he had rain or not. Well, the most of you know what has been done with sweet clover, and if there are any who do not know, I would ask them to send to the Department of Agriculture at Washington, and get the Bulletins on Sweet Clover.

Sweet clover is now considered equal to alfalfa as a forage plant and superior to anything for pasture in a dry season. The seed is selling for as much as alfalfa seed. What is the result of it? There are thousands of swarms of bees commencing to penetrate this sweet clover region which is rapidly enlarging northwest of Sioux City, Iowa, for 200 miles and will soon cover the States of South and North Dakota, Montana, Wyoming and Idaho. In other words, it will cover one million farms of 160 acres each.

I believe that we can produce 100 pounds of honey on each of these farms, or 100,000,000 pounds of honey annually in this sweet clover region.

What else does it mean? It means that every manufacturer of bee supplies or every breeder of queens, or dealer in bees, will have a vast outlet for his goods.

If any of our eastern friends are looking for a location where bees can be made to produce large profits, try anywhere northwest of Sioux City, for 200 miles. We hope that we can make this distance 500 miles before many years. Beekeepers are scarce in this territory, but it seems impossible to keep the bees long out of the sweet clover region. Stray swarms are going into houses and chimneys and boxes of all kinds, even mail boxes. We hope to be able to induce young beekeepers to visit this section with a view of settling here. The following is a report of what I have done this year. I have 300 pounds of honey and three colonies of bees for each colony, spring count, or in other words, 250 pounds of extracted honey and 50 pounds of section honey and 200 per cent increase in bees. This honey is of the very finest quality.

Vermillion, S. Dak.

Wintering in Two-Story Hives

By Brother Romain.

I WISH to state my own experience about that new system which is likely to work not a little revolution in beekeeping. This last winter, the most severe we had in a man's life, the thermometer registering 15 degrees C, or 6 degrees F., I wintered three colonies in double-story hives, the one below absolutely empty, the upper one thickly covered with newspapers. After every period of cold I examined the bottoms, which are easily pulled out in front after the French system. Well, I had to witness this incredible fact, the one-story hives had their bottoms covered with dead bees—several hundred—while the two-story hives had a dozen only, and this every time throughout the winter.

The "Gleanings" of February had a paragraph telling the advantages of the system. I have added one more proof. Other beemen could perhaps tell more, and the new way of wintering be generally followed. It would save time, money, bees and trouble.

How to explain that difference:

1. The bees in the upper story are, of course, in the warm part of the hive.

2. There is no deperdition of heat possible, prevented as it is by newspapers and boards.

3. The bees are quite out of the reach of cold, outside air, the empty story forming a good non-conductor.

4. The bees can form their group "freely," hanging from the frames, as I could see from underneath, the bottoms pulled out.

5. The bees of the outer rim of the cluster can easily crawl in to a warmer place, while they are chilled if forced to pass at the end of the frames to go to the center, and drop on the bottom and die. Many of those inanimate bees come to life again when put in a warm room. I did that several times.

6. The bees far from the entrance are not easily attracted outside by a bright sun, when the air is still cold enough to chill those who venture out.

Shanghai.

Drone-Comb Vs. Worker-Comb

By the Editor.

WHY do bees at times build a greater proportion of drone-combs? What is the normal proportion of drone-combs built by a natural swarm when left to its own devices. READER.

The normal proportion of drone-combs built in the brood-chamber by the bees has been variously estimated at from one-eighth to one-twelfth of the total number of cells. Quinby and several other noted writers assert that more drone-combs are built when the queen is old, but they do not state the reason. We propose to try to make it clear.

It is quite certain that the workers, when harvesting honey, which is the natural time for them to build combs, prefer building large cells, such as are suitable to store the crop and in which drones may be reared. There are two reasons for this, less material required and greater speed in building.

However, the bees desire to please their queen. When a new swarm is harvested, if the queen be young, she will fill the cells with eggs as fast as the bees build the combs, for a time at least, or until the first eggs laid hatch out of the cells as worker-bees. By that time the greater part of the hive is filled with combs. So the drone-combs are built on the outer edges, often at the bottom of some of the outer combs.

If the queen be old, her fertility decreased, she may not keep up with the workers. A quantity of comb may be built ahead of her needs. Then the workers will turn their attention to the building of storage cells and a large number of drone-cells will be the result.

It may be readily inferred that, since the eggs that are to hatch as workers are fertilized during their passage by the spermatheca, in the oviduct of the queen, a certain

UP TO THE LAST YEAR OR TWO, THE SOUTH HAD PAID LITTLE ATTENTION TO SCIENTIFIC DEVELOPMENT OF ITS BEEKEEPING. NOW THE CHANGE IS COMING FAST. W. L. WILDER, ABOVE, IS DELIVERING A LECTURE IN BEEKEEPING IN THE SCHOOLS OF MACON, GEORGIA.

amount of pleasure accompanies the act of fertilization of each egg. So the young queen desires worker-cells in which to lay. But if she is old and fatigued by repeated laying, the muscles may require rest. As her eggs enlarge in her ovaries without any voluntary act on her part she is compelled to keep on laying. She may then seek for drone-cells which will permit her to let the eggs pass out without effort or fertilization.

The workers evidently in some manner understand the wishes of the queen, for in this last instance they will not only build drone-combs if there is any space to build them, but, as called to our attention by Dr. Miller, they will often leave drone-combs unoccupied with honey and burnished for the queen's use even in remote corners of the hive, sometimes in the supers otherwise crowded with honey.

It is still a question whether the queen can, at her will, lay drone eggs or worker eggs. But there is no doubt in the mind of any observer that, when she is in good health and prolificness, she does lay drone-eggs only in drone-cells and worker-eggs in worker-cells.

Let us see now what lesson we may derive from these physiological facts.

If we harvest a swarm in an empty hive, giving the bees only very narrow strips of foundation as starters and guides, if the queen is young she will probably keep up in her laying with the comb-building and the result will be a large proportion of worker-comb. But if we should give the swarm two or three combs already built, or if, as some do, we should hive the bees on half sheets of foundation, then the bees would at once find themselves ahead of the queen and a large proportion of drone-combs would be built.

We should, therefore, hive a swarm upon either a hive full of comb or full sheets of foundation, or no combs at all.

If the queen is old, there is much danger of drone-combs being built, so, in that case it is better to give the swarm fully built combs.

If we replace one comb with an empty frame, in a full colony, during our manipulations, divisions, making of nuclei, etc., we will be almost certain of seeing this empty space filled with drone-comb, for the queen has the entire surface of the other combs to keep her busy. However, if this space is given, in early spring, in the center of the brood-chamber, at a time when the queen is eagerly looking for worker-cells, and the outer combs, not covered with bees, are too cold for her to occupy them, we may secure very nice worker-combs in this way. But we must remember that combs are very expensive to build; so a task of this sort must not be put upon any but the richest colonies, when they have more honey than they may be able to use in breeding before the honey crop.

Let us bear these facts in mind if we would have the greatest possible results from our bees. A large proportion of drones is a waste and should be permitted only in the colonies which we desire to reserve as breeders. One or two such colonies are sufficient for an apiary.

Bees and Grapes

From a Jerseyville, Ill., Paper.

THE following clipping was received in September at the office of the American Bee Journal:

JERSEYVILLE TO WAR ON HONEYBEES

Commissioner M. B. Voorhees Would Forbid the Keeping of Bees Within City Limits, and an Ordinance was Ordered Drawn Last Wednesday Prohibiting the Keeping of Bees.

"Bees are ruining fruit in my part of the city," said Commissioner Voorhees at the council meeting last Wednesday evening, "and one of my neighbors requested me to urge the City Council to pass an ordinance prohibiting the keeping of bees within the city limits, and thus save the valuable product of the grape vines."

The question was discussed pro and con and Commissioner Wagner stated that the grapes at his home had been ruined by bees stinging the grapes in years past when nearby neighbors had several hives; he expressed himself as favorable to such an ordinance being passed. Mayor Shephard remarked how fine the grapes at the home of his aunt were, and was surprised to know that it was because of the removal of the hives of a neighbor near the Shephard home and the result of the confab was that Corporation Counsel G. G. Reardon was instructed to draw an ordinance prohibiting the keeping of bees within the city limits.

As questions of this kind are quite in line with popular prejudice, the editor saw fit to take up the gauntlet, in favor of the bees of Jerseyville. The following letter was therefore addressed to the City Commissioner mentioned in the clipping:

"Mr. M. B. Voorhees, Jerseyville, Ill.:

"Dear Sir—I am informed, whether correctly or not, that your city is about to pass an ordinance prohibiting the keeping of bees within the city limits. I would like to ask whether this is so. Meanwhile I wish to present to you the following statements:

ANOTHER APIARY OF W. L. WILDER, WHO IS NOT TO BE CONFUSED WITH OUR OLDER CORRESPONDENT, J. J. WILDER, OF CORDELE.

APIARY OF W. L. WILDER. IN GEORGIA APIARIES HAVE TO BE RELATIVELY SMALL.

"1. Bees cannot sting grapes. If they did, it would poison the grapes and they would be killed by their own devices.

"2. Bees cannot puncture grapes in any way. You can test this to your own satisfaction by placing a bunch of sound grapes within a hive of bees. You will find that the grapes will be left untouched. If you puncture or crush one of the berries, the bees will consume the juices.

"3. The damage done to grapes is done by birds, at daylight, before sunrise. The bees come afterwards and gather what would otherwise be lost; for grapes that have been picked by birds will not keep.

"4. Even if bees could puncture grapes and did so, an ordinance forbidding the keeping of them within city limits would be of no avail, for bees can fly for a mile or more, and usually fly half a mile in search of food.

"5. An ordinance forbidding the keeping of bees within city limits would be null and void. This has been settled by the Supreme Court.

"C. P. DADANT,
"Editor American Bee Journal."

In reply to this letter, Mr. Voorhees very courteously explained that this proposed ordinance which had been discussed was suggested more in joke than in earnest, and that no ordinance would be passed.

Beekeepers of the country, take notice. Do not allow yourselves to be worried by newspaper articles.

Shipping Pound Packages South for Winter

By F. M. Baldwin.

THE advisability of the Northern beekeeper killing off his bees and selling the stores they would consume in the winter and stocking up with combless packages from the south the next spring, has been suggested. If that was worth thinking about then why not consider sending them to the south in the fall to be wintered and let them come back in May, or as early as the shipper might find wise? They can go both ways in combless packages, according to my thought. The cost of sending them back and forth by express would be less than the honey that it would take to winter them. Especially should that be true this season.

I would be glad to help on with such an experiment, if I might. I return to Sanford, Fla., from my visit here in Virginia about September 15. October 1 we expect a fall flow from goldenrod and wild sunflower. It is probably too late for the experiment this year. But I would be glad to furnish the hives and pay the express on about a dozen packages as an experiment, provided they could reach me early enough to get the benefit of the fall flow. They would need to build up on that and store enough to carry them until willow and maple came in January. I would guarantee them to be returned in good condition in the spring. I meant to say above that I would pay express one way. If the owner only paid it one way and furnished the cages he would winter his bees quite cheaply. The trouble would be no more than packing them for winter in the north, I judge. The bees that were left in the hives in the north after the packages were taken away could be killed or bunched up with the others to increase the fall surplus if enough were still coming in to make it worth while.

Roanoke, Va.

[Mr. F. M. Baldwin raises the question whether it might not be a paying proposition for the Northern beekeeper in the fall to ship his bees South in queenless packages, to be returned in the same way in the spring. Perhaps not many who have practically entire success wintering in the North would think it worth while to kill off bees in the fall and buy combless packages in the spring. Yet there are many who do not have entire success in wintering, and some who make a practically entire failure at it. For those beekeepers who are certain of heavy winter losses it would seem the wise thing to kill the bees and save the honey rather than to wait until the stores are used up and have the bees die.

Granted, then, that killing in the fall and purchasing from the South in the spring be decided upon, the question arises whether it will not pay the northerner to ship his bees in the fall and save paying anything for his bees in the spring.

Even if the trouble of packing should be enough to offset the cost of bees in spring, there is yet another item of some account. It is that by the plan proposed by Mr. Baldwin the sum total of bees in the country would be more than in the case of fall killing, and it is true in general that there are not enough bees in the country for the best welfare of the nation. The matter seems worth considering.—C. C. M.]

[Many years ago, when the business of queen-rearing for sale was just beginning, some people tried to winter their nuclei and in some instances succeeded quite well. There was a great economy, if you kept them in the cellar, over the wintering of full colonies. One of the queen-breeders advised every beekeeper to reduce his colonies to nuclei for winter, to save honey, and strengthen them again in the spring. He must have tried his own medicine that winter, for he was never heard from after that in the bee papers.

I am very much afraid that the man who will go to to the expense of shipping his bees south every winter to have them re-shipped to him in the spring, for the sake of economy, will soon conclude that it is mistaken economy. But that would surely be better than killing one's bees in the fall, to save honey and buying bees by the pound the following spring, expecting to make it as profitable as the usual way.—C. P. D.]

Snakes Like Sweets

By E. L. Thompson.

Dear Dr. Miller:

Reading your answers to questions in the August number of the American Bee Journal, I was greatly interested in No. 6 under "Taking Bees From a Tree," as it reminded me of an experience I had a few summers ago.

I was sexton in a city whose cemetery was a hill covered by natural timber and infested with spotted adders. One day I placed a small paper bag containing a few ounces of candy upon the plate under the roof of our tool-house and left it there for several weeks untouched.

This was in the spring time and as the season advanced and Decoration Day approached, I was crowded with work. One day, with my sleeves rolled to the elbows, I rushed into the tool-house after something. I do not remember what, and placing my hand against the wall near the plate where I had put the candy, I was looking behind some planks which were piled next to the wall upon the floor; when I suddenly became aware that something was around my bare arm, and instinctively jerking my hand away from its resting place, the thing upon my arm went down upon the floor with a thud.

I was horrified to see a full-grown spotted adder lying at my feet too stunned to move. I was not long in putting it out of business, but that was my first knowledge that snakes like sweets. The candy was gone, though the bag was still there. Hence, I would guess, in the case of the South Dakota man, that the snake coiled up in the hole where bees were wont to dwell before the coming of the intruder, was there for honey, maybe for bees also, but certainly for honey.

Antioch, Ill.

Honey-Yielding Flowers of British Columbia

By W. J. Sheppard.

I AM endeavoring to make a list of the flowers of British Columbia, both indigenous and introduced, that yield honey, with their proper botanical designations, and times of flowering. I find it somewhat difficult to do this without being able to make a tour of the Province, at the different seasons, for the purpose. Subjoined is a list of the native flora of the East and West Kootenays, from which honey is gathered by the bees, as far as at present obtained, and the writer would be glad to receive any information from beekeepers, or others interested, so as to add to it and make it complete for the whole of the Province. In course of time it may be possible to tabulate the different species that appear to specially flourish and are only to be found in certain districts, as sometimes this is very marked. It would then be easier to distinguish the different honeys produced in these districts, and to classify or grade them, and would also be a guide as to the best locations for keeping bees. Take the Snowberry, for instance, whose insignificant looking little flowers the bees are particularly partial to. In this district of West Kootenay the writer has seen but the one species

(Symphoricarpos racemosus). In East Kootenay the one called the wolfberry (Symphoricarpos occidentalis) is apparently the only kind that grows there. The Dogbane, locally called Milkweed, that is common here, is the Spreading Dogbane (Apocynum androsaemifolium). Possibly in other parts of the Province the Indian Hemp (Apocynum cannabinum) or its variety, (A.. hypericifolium), may be found in abundance. The Maples, which abound and yield quantities of early honey in some of the Coast districts, are scarce here, and so are not included in the list for the Kootenays. The Buckthorn (Sacred Bark, or Cascara), (Rhamnus Purshiana) I have not yet observed in this section, although it is said to be common nearer the Coast. It is a small tree, 15 to 20 feet high, preferring a moist situation. The fluid extract, Cascara sagrada, used as an aperient medicine, is made from its bark. At the end of last August the writer noticed Rhamnus Frangula (introduced from Europe) growing at the Dominion Experimental Farm, Invermere. At that time quantities of its black, berry-like drupes were ripe, but it was still flowering and covered with bees. There are flowers in this region that are supposed to yield honey but which it is not certain that the bees visit at all. One of these is the Buckbrush, or Snowbrush (Ceanothus, order Rhamnaceae) of which there are two species, the deciduous and the evergreen, both of which bloom at about the same period. The flowers of both kinds are alike and have a somewhat strong aroma. In East Kootenay the writer has noticed the Oleaster, commonly called Wolf Willow, or Silverberry (Elaeagnus argentea) in bloom in the month of May, but has never been able to find any bees on its pretty pale yellow flowers, which are very fragrant. It is said to yield honey on the prairies. As a rule all plants that secrete nectar have sweet-scented flowers. Then there are the False Heathers, three species (Phyllodoce grandufloris) white, (P. empetriformis) red, (P. intermedius) pink, that grow in the mountains at a high altitude. As far as I am aware it has never yet been ascertained whether they secrete nectar. If they do, it might be worth while to move the hives up the mountains in Augst sufficiently near for the bees to reach these flowers, as is done in the Heather districts in Scotland and the North of England. The Blueberry and the Huckleberry yield honey in some localities. The former grows very abundantly at Nakusp, on the Upper Arrow Lakes.

Indigenous Honey-Yielding Flowers, Kootenays, B. C.

Willows—Salicaceae. (Willow family).
Glaucous or Pussy Willow. Salix discolor.
River Bank Willow. Salix longifolia.
(Flower in March and April and probably yield more pollen than honey).

Dandelion—Compositae. (Composite family).
Taraxicum officinale.
(Flowers in April and May).

Bearberry — (Kinnikinnik). Ericaceae). (Heath family).
Arctostaphylos Ura-ursi.

Blueberry—Ericaceae. (Heath family).
Vaccinium ovalifolium.

Huckleberry—Ericaceae. (Heath family).
Gaylussacia resinosa.

Choke Cherry—Rosaceae. (Rose family).
Prunus demissa.

Bird or Pin Cherry—Rosaceae. (Rose family).
Prunus pennsylvanica.
(Flower in May).

Barberry—(Oregon grape). Berberidaceae. (Barberry family).
Beberis aquifolium.

Wild Raspberry—Rosaceae. (Rose family).
Rubus.
(Flower in June).

Dogbane — (Milkweed). Apocynaceae. (Dogbane family).
Apocynum androsaemifolum.
(Spreading Dogbane).

Snowberry—Caprifoliaceae. (Honeysuckle family).
Symphoricarpos racemosus.

Wolfberry—Caprifoliaceae. (Honeysuckle family).
Symphoricarpos occidentalis.

Canada Thistle—Compositae. (Composite family).
Cirsium arvense.
(Flower in June and July).

Willow Herb or Fireweed—Onagraceae. (Evening Primrose family).
Epilobium angustifolium.

GoldenRod — Compositae. (Composite family).
Solidago canadense.
(Flower in July and August).

Nelson, B. C.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

Helping Along

Some of the sisters, upon looking at this department, may be surprised not to find it fully occupied with bee-talk. Apology is hardly necessary for giving way to the appeal of the United States government to do just a little to help feed our neighbors across the sea. This will be done if we are willing to use corn to some extent in place of wheat in preparing our daily bread.

It is well to remember that it is our fight the allies are fighting, for every day it is becoming more clear that it was the full intention of the autocrats who are responsible for the war to gain the ascendency over the United States as well as over other nations. And bravely and unselfishly the allies are doing their part. Just now, if they were selfish, they might be saying, "We have things now in shape that we can hold back a little, and wait for America to get ready her forces, thus saving our men and money." Instead of that they are pushing ahead with all their might; and it is only the fair thing that we should be willing to do our bit by way of furnishing food that we can well spare with no real privation.

Is there any satisfactory reason why food prepared from corn should be counted delicious in Virginia and utterly ignored in Iowa, where corn is just as plenty? Why shouldn't an Iowan learn to relish it just as much as a Virginian? In nearly every family it lies entirely with the women folk. The men will eat, with more or less thankfulness, whatever is set before them. In some cases, at least, the men will welcome the change.

Will the good women who read this department make a fair trial of some of the recipes contained in this number of The American Bee Journal?

U. S. FOOD ADMINISTRATION

Public Information Division

Breakfast Spoon Breads

It is worth remembering that there are no medium grades of cornbread. It is either irresistibly good or uneatable. So housekeepers who are trying to make their families cornbread lovers must practice for a 100 per cent record. This is especially true of spoon-breads, but the perfect product is worth the effort. These soft cornbreads are very popular for breakfast in the cornbread belt. They are served with a spoon from the dish in which baked. Spoon-bread makes an excellent breakfast combination with hash or scrambled eggs.

Here are three favorite spoon-breads:

Virginia Batter-Bread—
1 cup white cornmeal.
1½ cups boiling water.
1 cup sweet milk.
1 teaspoon salt.
2 teaspoons baking powder.
2 eggs.

Sift meal into a bowl. See that the water is boiling vigorously, pour over the meal, stirring at the same time. When luke warm, add the sweet milk, the well-beaten egg yolk and beat thoroughly. Add the baking powder, and last fold in the stiffly beaten whites. Pour into a hot, well greased baking dish and bake in a moderately hot oven thirty minutes. If baked in a shallow pan twenty minutes will suffice.

Hominy Bread—

2 cups boiled hominy grits.
2 eggs.
1 cup sweet milk.
1-3 cup flour.
1 teaspoon baking powder.
1 tablespoon fat.

Cook hominy with four times the bulk of water. Cool and add the sweet milk and well beaten eggs. Sift in the flour and baking powder. Last add the hot fat and pour into greased baking dish and bake in hot oven until firm and brown, but not stiff.

Cornbread with Rice—

2 cups sour milk.
1 teaspoon soda (scant).
2 cups boiled rice.
1 cup cornmeal.
1 teaspoon shortening.

Combine ingredients in order named and bake in greased bowl until firm.

Corn is King

The "stranger" in the Blue Ridge leaned on the rail fence talking to a long, rangy mountaineer. His eyes wandered over the poor little hill farm. You know the kind—perpendicular field of rocks and stumps and spindly corn, that is cut at the top of the hill and then picked up at the bottom. "How much corn do you raise?" asked the "stranger."

"Enough to do me," was the answer. The answer was ultimate; the mountaineer had solved the problem. Enough corn to "do him."

Corn is king in America today. There is enough corn to "do us," more than three billion bushels. Yet Europe starves while we sit in the midst of this golden plenty.

We have thirty bushels apiece and eat during the year less than a bushel apiece.

Four-fifths of all the farmers in America grow corn.

One- third of all the land under cultivation is in corn.

Then what is the answer to our allies?

We will double the amount of cornmeal we eat. Yes treble the amount we eat, and release the wheat for you.

Let this be your answer to the plea of heroic France for bread. Let this be our answer to the men who have held the line against our common enemy for three years. Let this be our answer to the women who have stood back of those men and held the second line. Let this be our answer to the little ones who stretch their feeble arms to us crying for bread.

Midday Dinner Cornbreads

When there is so much corn and not enough wheat, it is worth while to learn to eat cornbread. The success of this venture depends on the kind of cornbread the American woman serves. She may make her dinner cornbread plain or make it with eggs, but if she wants to create a cornbread appetite in her family, she should make it of fresh unbolted meal and make it crisp and golden brown.

Here are two favorite dinner breads:

Corn Pones—

2 cups white meal.
2 cups buttermilk.
½ teaspoonful soda.
1 teaspoonful salt.
1 tablespoon melted fat.

Put fat in biscuit tin or iron griddle on top of the stove. While it is heating, sift meal and add salt. Stir soda into the buttermilk, mixing thoroughly. When frothing reaches its height, pour milk into meal and stir together. Add the smoking hot fat. The mixture should be a very stiff batter. If too thick, more milk or water may be added. Drop from spoon in small, oblong cakes in the hot pan. Leave the pan on top of the stove until the bread begins to rise, then cook in moderately hot oven. The crust of the cornbread should be thick, crisp and golden brown.

Cornmeal Sticks—

2½ cups cornmeal.
½ cup flour.
1 teaspoon soda.
1 teaspoon salt.
1 teaspoon baking powder.
1 egg.
2 cups buttermilk.
1 cup sweet milk.

Sift meal, flour and baking powder together. Add salt.

Stir soda into the buttermilk until thoroughly dissolved, and while milk is frothing vigorously, mix with meal and flour. Add sweet milk. Beat thoroughly and add well beaten egg. Have ready irons well greased and very hot. Pour mixture in at once and bake in quick oven until crisp brown.

Risen Cornbread for Supper

The spoon-breads are equally good for supper and always make a substantial dish with a meat stew. When company is coming or you want to surprise the family, try risen cornbread for supper. It is not advisable to attempt it for breakfast because meal ferments so rapidly with yeast that the product is likely to be sour by morning.

1 cake compressed yeast.
2 cups sweet milk, scalded and cooled.
2 tablespoons brown sugar.
2 tablespoons lard.
2½ cups white cornmeal.
1 cup sifted flour.
1 teaspoon salt.
2 eggs well beaten.

Dissolve yeast and sugar in lukewarm milk and add melted fat. Stir in the cornmeal, flour, salt and add well beaten eggs. Beat thoroughly. Fill greased bowl two-thirds full. Set to rise in a warm place for about an hour. Be careful that it does not over rise. It should be baked as soon as light. The baking will require from twenty to thirty minutes, according to thickness of pone.

LEGAL SERVICE DEPARTMENT

Apiary Near Dwelling

Have you data in regard to laws in other States relating to locating bees? How close to a dwelling-house? How close to a barn? How close to a constantly traveled road? What protection has the beekeeper against spite work? Iowa.

There is very little specific legislation in regard to bees. In a few States there are laws especially designed to protect the beekeeper from malicious persons who would poison his bees or destroy his property, but little or nothing defining the exact status of the bees. Most of our laws relating to this subject are court decisions which are based on general principles. An Iowa decision makes the following rule for cases of this kind:

"Nothing could be done by the keeper of bees to protect all from their attacks. These might occur miles from the hives and beyond his reach. But they have fixed habitations . The location for these is always a matter for his determination, and it is not too much to exact of him the exercise of ordinary prudence in so placing the hives as to avoid unnecessary danger to those who are likely to make lawful use of the premises or the highway nearby. In other words, he must so use his own as not to interfere with the rights of others."

It is clear enough that the beekeeper has no legal right to continue to keep bees where they are a constant source of annoyance or danger to the public. While the city officials are not permitted to pass a general ordinance prohibiting the keeping of bees within the corporate limits, they have ample authority to deal with each particular case. It all depends upon the circumstances of a particular case, and for this reason it would be very difficult to enact a statutory provision that would suit all cases.

The habits of the bees place the beekeeper in a peculiar relation to the public and his best insurance is to make as many friends as possible. Gifts of honey to persons most likely to be annoyed are quite likely to save trouble later.

Apiaries in Towns

Some four or five years ago I was keeping bees, a dozen colonies, in my house-yard, adjacent to the main street of the town. As they became troublesome, the town council resolved to make me move them. I forestalled trouble by offering to move to the edge of town, onto an unused street, if the town would give me the use of it indefinitely. This they did. This ground was then 300 feet from the nearest building. Since then a man has built a barn within [illegible]ty feet of the hives. Another man built a barn and implement shed within seventy-five feet of the hives. Last night at a meeting of the council a petition was presented asking that I be made to move my bees outside the corporation. This, I state, would be equivalent to driving me out of the business, as I know of no location I could use, considering my health and convenience.

What steps must I take?

If they force me out of town, what can I do?
Buck Grove, Iowa.

Since the apiary is located on a city street it is probable that you can be compelled to vacate unless you can show that you are entitled to stay for a longer period for a consideration. To compel you to move beyond the bounds of the city is, however, another matter. It all depends upon the question of whether or not your bees are a nuisance. If the bees have become troublesome there is ample authority of law to abate a nuisance and you may be compelled to take such steps as may be necessary to remove the annoyance. If you can find another location inside the limits of the town where your bees will not be troublesome to the public, it would be difficult for the town council to compel you to get out.

If you are legally forced to move, all you can do is to move or quit the business. Better call the attention of town officials to the fact that the Buck Grove apiary has become famous and but for it few of the readers of the American Bee Journal would ever have known that there is such a town on the map. You might offer to build a fence around the apiary and give a bucket of Bonney honey for every sting. In that event the bees, even stings, might become quite popular.

There are some purely local questions at issue which can only be determined by an attorney who has familiarized himself with all the details of the whole situation.

MISCELLANEOUS NEWS ITEMS

Bee Conventions.—This is the list of conventions so far arranged for this fall:

Illinois—Nov. 14-15.
Ohio—Nov. 23-24.
Indiana—Nov. 26-27.
Michigan—Nov. 27-28.
Chicago N. W.—Nov. 30 and Dec. 1.
Minnesota—Dec. 4-5.
Iowa—Dec. 4-5.
Wisconsin—Dec. 6-7.

The Chicago Northwestern meeting will be held in room 138 of the Great Northern Hotel, Dearborn Street and Jackson Boulevard, Chicago. Messrs. Root and Phillips are expected to attend most of these meetings. The editor of the American Bee Journal expects to attend the Illinois, Michigan, Northwestern and Iowa meetings.

JOHN C. BULL,
Secretary National and Northwestern Associations.

Convention Notice of Ontario Beekeepers' Association.—The Executive Committee of the Ontario Beekeepers' Association has arranged to hold its annual convention at Hotel Carls-Rite, Toronto, on Tuesday, Wednesday and Thursday, December 11, 12 and 13, 1917. The following subjects and speakers have been arranged for:

Mr. B. F. Kindig, State Apiary Inspector of Michigan, has consented to be present and speak on "Some Mistakes in Management in the Bee-Yard" and of "Retailing the Honey Crop."

Subjects discussed by Ontario members will be "Simple Methods of Rearing and Introducing Queens," by John Newton, Thamesford; "Mysterious Losses of Adult Bees," by James Armstrong, Selkirk; Wm. Couse, Streetsville, and W. A. Chrysler, Chatham; "Out Apiaries," by E. T. Bainard, Lambeth; "The Farmer Beekeeper," by W. W. Webster, Little Britain; "Apiary Locations," by H. G. Sibbald, Toronto; "Wintering," by J. L. Byer, Markham, and "Beekeeping Appliances," by W. J. Craig, Brantford.

There will also be question drawers and general discussions as opportunity offers.

On one of the convention evenings the members will have dinner together at Hotel Carls-Rite, so that the social side of the convention may not be overlooked.

This is the annual gathering of the beekeepers of Ontario. All are cordially invited, including those from across the line who can make it convenient to attend.

MORLEY PETTIT,
Secretary-Treasurer.
Guelph, Ont.

Illinois State Beekeepers' Association.—The sessions will be held in the sun parlor of the Leland Hotel, November 14 and 15, 1917, and the night meeting of the 14th will be in the Leland banquet hall.

Call to order at 10 a. m. by President Baxter, of Nauvoo, Ill.

Invocation, Rev. C. Warber, Alhambra, Ill.

Welcome Address.

Response and President's address, by the President.

Order of business: Reception of members, issuing of badges, and recess until noon to visit and get acquainted.

Afternoon Session—First Day—

Report of A. L. Kildow, State Inspector of Apiaries, Putnam, Ill.

"Better Beekeeping," Hon. N. E. France, Plattsville, Wis.

Question Box—In order all the time.

Night Session—

"Beekeeping, North and South," illustrated—Frank C. Pellett, Atlantic, Iowa.

Second Day—Morning—

"Space Between Frames" and discussion, led by C. P. Dadant, of Hamilton, Ill.

If we get into the Convention Chain with the other States we also hope to have with us Dr. Phillips, of Washington, D. C., and E. R. Root, of Medina, Ohio.

Election of officers for 1918.

Group photograph, to go in our 1917 Report.

Judging the exhibits; ballot by non-exhibitors.

Second Day—Afternoon—

Prize Essays—$5, $4, $3, $2, $1.

Awards will be given on 150 pounds of comb honey and 150 pounds of extracted honey.

Handsome certificates will be issued to the winners of these awards, and upon winning either of them the third time, a valuable gold medal will be given the winner. (Explained further at our meeting).

Miss Stewart, of Chicago, will again be our reporter.

Our meeting is for women as well as men.

Headquarters, Leland Hotel; rates, $1.25 and up; European plan.

Honey in Place of Glycerine.—Reports indicate that in some European countries honey is being used quite extensively to replace glycerine in pharmaceutical preparations.

Certain governments have already commandeered all glycerine available for the manufacture of explosives, and this has led to a search by druggists for something to take the place of glycerine.

Honey is, of course, not a preservative as is glycerine, and can only be substituted where the preparation is for immediate use.

The probability of druggists in this country being unable to secure glycerine seems remote at this writing, but should the conservation of our entire glycerine production for war purposes become necessary in the future, honey will undoubtedly be found of considerable use.—"Merrill's Messenger" for September.

To the Honey Crop Reporters of the Bureau of Crop Estimates.—In view of the need for a greatly increased honey crop in 1918, beekeepers should at once complete preparations for winter, so that every colony will be strong in bees next spring. It cannot be urged too strongly that these preparations be made immediately. Do not be misled into believing that no special care is needed in winter. Because of neglect at this time, honey crops of the following year are often reduced one-half and the ill effects of neglect are too well proven to be debatable. Scarcely a winter passes that beekeepers all over the United States do not lose 10% of their colonies and usually 75% of the remaining colonies are reduced so that they cannot do their best the following summer.

For proper development in the spring, a normal colony of bees needs plenty of protection from cold and wind. In winter they need only the stores and protection, but if abundant protection is then given, the room for spring breeding may also be provided at this time. If bees are properly prepared for winter there is nothing a beekeeper can do which will benefit a normal colony from October 1 to swarming time.

It is suggested that each colony be given two hive bodies (preferably 10-frame), the top body being well supplied with stores in addition to what honey may be in the lower body. This arrangement will provide abundant breeding room and stores. Beekeepers hesitate to leave so much honey when they feel that they might sell it, but this honey is not wasted. In almost every locality strong colonies can gather enough extra honey in the spring to more than replace what is consumed in winter and by spring breeding. It often costs more to winter weak colonies than strong ones, because weak colonies cannot take advantage of the earliest flows.

Explicit directions for making winter packing cases are not necessary, for any beekeeper can devise a suitable box. It is suggested that colonies be packed in groups of four with the hives touching each other, two facing east and two west, to reduce expense and labor. Packing should be provided on all sides, top and bottom. Four inches below, six inches on the sides and a foot on top will not be excessive. If the bottom or front of the hive is left unprotected, the bees will not receive the full benefit of the other packing. Any packing material, such as sawdust, planer shavings, finely cut straw or packed forest leaves, may be used and the case should be water proof. Roofing paper over the cover is desirable. Some sort of tunnel through the packing is necessary for ventilation and to permit flights in good weather. With abundant packing a small flight opening is best. Do not make an alighting board on the outside of the case for it only serves to catch snow. Ventilation through an absorbent cover will do no harm, but is not essential if abundant packing is provided. Wind protection is necessary, and unless this is provided heavy packing is of little value.

The principles of outdoor wintering are discussed in Farmers' Bulletin 695, a copy of which may be had on request. Every beekeeper should pay special attention to wintering this year, for the Nation needs a large honey crop next year. It will always pay to give attention to this part of beekeeping, which is too often neglected. Remember that proper wintering is simple and inexpensive in time and money, since stores are saved and spring manipulations are eliminated. The winter cases pay for themselves every year. You can carry no better insurance for a crop next year.

E. F. PHILLIPS.

Michigan Meeting.—The annual meeting of the Michigan Beekers Association will be held at Saginaw on Tuesday and Wednesday, November 27 and 28, 1917. A program is now in course of preparation. Men prominent in the beekeeping industry both from within and without the State will be present to offer to those attending the benefit of long and very valuable experiences. Every beekeeper is invited to attend.

B. F. KINDIG.

Don't Miss It.—The Minnesota Beekeepers' Association holds its annual meeting December 4 and 5, 1917, at Minneapolis, Minn. We expect an exceptionally good meeting, as usual, with many Minnesota beekeepers and outsiders taking prominent parts on the program.

Every possible Minnesota beekeeper should plan to attend and stay the two following days for the last two days of the 1917 session of the Minnesota Horticultural Society. Send to the Secretary, L. V. France, University Farm, St. Paul, Minn., for a program if you do not receive one by November 10.

Boneset Yielding Honey.—I am sending you a sample of a couple of weeds that grow here and are getting scattered far and wide. I can't find anyone who knows what they are. One kind grows from two feet to five feet high and comes from the root like the ironweed, but the other weed does not.

The two plants are the finest honey plants I ever saw. The bees work on them from early till late.

I have 82 colonies, but will only get about 2,000 pounds this year. Last year I had 62 colonies and they made 5,300 pounds. This season has been the poorest in twenty years.

If you know what these weeds are please answer through the American Bee Journal, of which I am a subscriber.

Newton, Ill.

These are both "thoroughworts" or "boneset." They are fairly good honey plants, but the honey is not of very good quality. They blossom in August-September. The one is Eupatorium urticaefolium, the other Eupatorium serotinum. The first is also called "white snakeroot."

White snakeroot is supposed by some people to cause milk fever or trembles in animals feeding upon it. (Dr. L. H. Pammel's Manual of Poisonous Plants).

Beekeeping in Virginia.—Virginia beekeepers are getting interested. The Brunswick County Beekeepers Association came into being at Lawrenceville, Virginia, Saturday, September 29. This new association began because of the efforts of County Agent J. B. Lewis, and the assistance given him by Entomologist W. J. Schoene and Kenneth Hawkins, of the United States Department of Agriculture, who have been doing extension work in Virginia several weeks this summer. The officers named are J. T. Holloway, President; W. D. Kates, Vice President, and Dr. Richard Manson, Secretary and Treasurer.

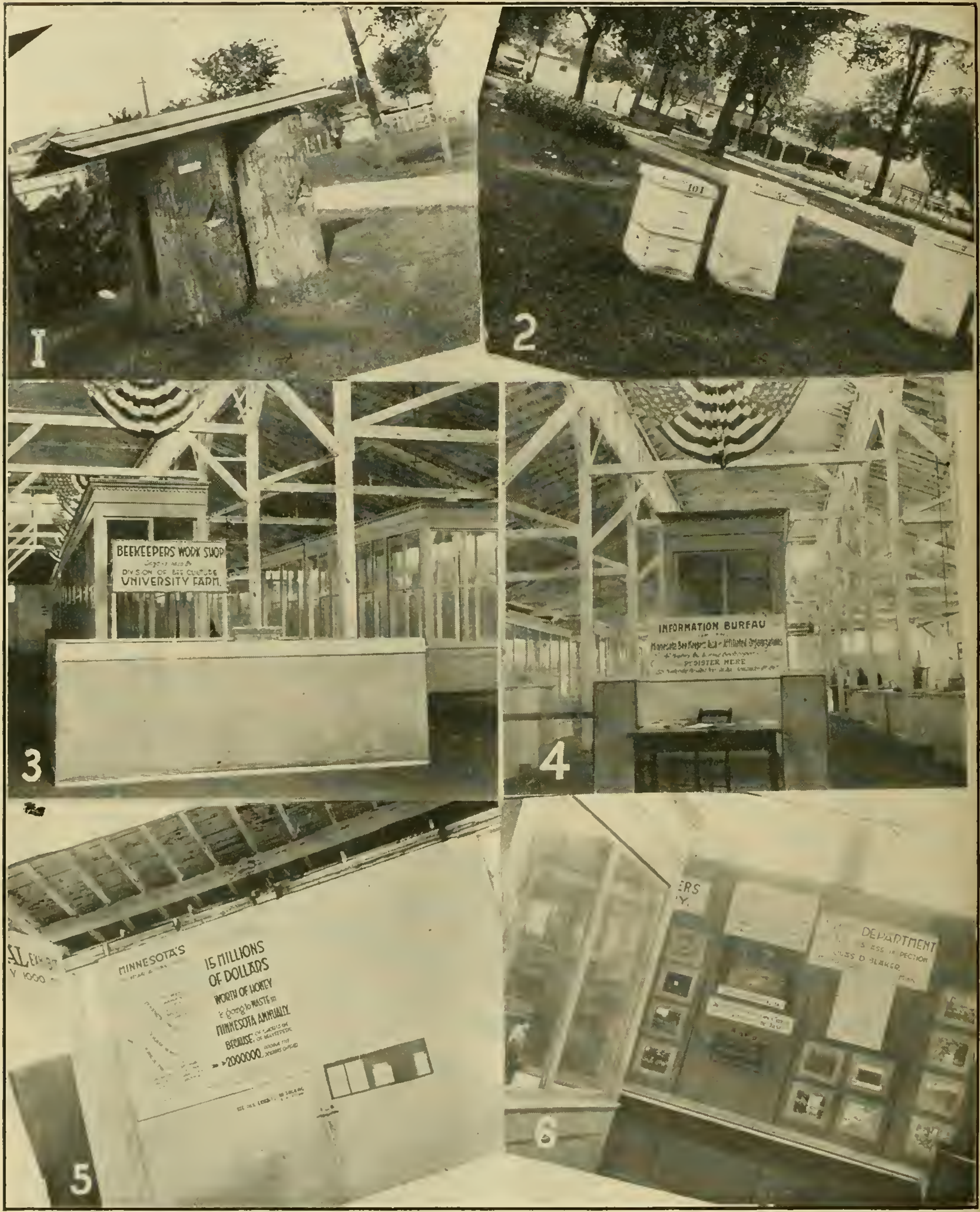
UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Markets

Semi-Monthly Market News Bulletin

This is the eighth of a series of similar reports which will be issued by this Bureau on the first and fif-

WHITE SNAKEROOT IN PELLETT'S WILD GARDEN.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BEEKEEPERS WORK SHOP
DIVISION OF BEE CULTURE
UNIVERSITY FARM.
4
INFORMATION BUREAU
Minnesota Bee Keepers Assn. - Affiliated Organizations
REGISTER HERE
5
MINNESOTA'S
15 MILLIONS OF DOLLARS
WORTH OF HONEY
is going to WASTE in
MINNESOTA ANNUALLY
BECAUSE
2000000
6
DEPARTMENT

MINNESOTA HAS ONE OF THE LARGEST APPROPRIATIONS OF ANY STATE FOR PREMIUMS AT THE STATE FAIR. ABOVE ARE SOME OF THE DIFFERENT UNIVERSITY DIVISION OF BEE CULTURE EXHIBITS AT THE STATE FAIR THIS YEAR.

1. An old way of beekeeping in Minnesota, log hive over fifty years old (Standing in front of Bee and Honey Building).
2. The modern way of Minnesota beekeeping.
3. Beekeepers' workshop; demonstration of nailing up hives, etc.
4. Information Bureau and register for beekeepers.
5. Poster map of Minnesota showing the three large beekeeping regions of the State.
6. Partial sidewall view of exhibit. Apiary inspection exhibit was beside that of the University Division of Bee Culture.

teenth of each month during the honey-shipping season. The information is secured by representatives of the Bureau located in the markets, and is transmitted to Washington by wire. For the present the bulletins will be issued only from Washington. These bulletins will be sent by mail free to any person requesting them. All inquiries should be addressed to Charles J. Brand, Chief, Washington, D. C.

Telegraphic Reports From Today's Markets—Jobbing Prices

(L. C. L. prices on large lots to jobbers).

Note: Arrivals include receipts during preceding two weeks. Prices represent current quotations.

Cincinnati—Arrivals, 1 car Wisconsin comb, 5 barrels and 6 cases Iowa, 28 cases Michigan, 10 cases Alabama, 1 barrel and 9 crates Kentucky; nearby receipts light. Demand good, market very strong, movement moderate, account of high prices. Extracted honey: Light amber, 15c; orange and white sage, 17c per pound. Comb honey: Fancy white heavy, $4.75; No. 1, white heavy, $4.50 per 24-section case.

St. Louis—Extracted honey: Southern bright amber in barrels, 11½-12c per pound; in cans, 12-12½c per pound. Beeswax: Light supplies; 36-37c per pound. Honey arrivals: 1 car Porto Rico and moderate l. c. l. Southern.

Minneapolis—Light local receipts; no rail arrivals. Demand and movement slow, market steady. Colorados: White comb honey, 24-section cases, $4.00-$4.25. Extracted honey, white, in 60-lb. cans, mostly 14c per pound. Minnesotas: Comb honey, 24-section cases, fancy, mostly 18c; choice mostly 16-17c per section. Extracted honey: White, in 5 and 10-lb pails, mostly 15-16c per pound.

St. Paul—Arrivals, approximately 700 cases Minnesota comb, 10 cans extracted and 2 barrels; approximately 1020 lbs. mixed comb and extracted from Wisconsin, 1 car from Ohio, mostly extracted, and light local comb receipts. Demand moderate, market firm. Minnesota and Wisconsin: White comb, 24-section cases, 18-19c per section; extra fancy, small lots, 20c per section; no sales extracted honey reported. Beeswax: no sales reported.

Chicago—No carlot arrivals; receipts from nearby States very light. Demand active, market strong. Comb honey: White clover, fancy mostly 22c per pound; No. 1, 20-21c per pound. Extracted honey: Fancy white clover and basswood, mostly 15c per pound; other stock 13½-14½c per pound. Extracted honey: California, practically cleaned up; no sales reported. Beeswax, 35-38c per pound, according to purity.

Denver — Arrivals, approximately 3500 cases white comb and 60,000 lbs. white to light amber extracted. Demand and movement moderate for comb; demand light, movement draggy for extracted honey; market firm. Quality and condition generally good. White comb honey: Firsts, $4.05 per 24-section case; seconds, $3.60. Extracted honey: White to light amber, 14½-15c per pound. Beeswax: Receipts very light; price to producer, 34c per pound.

Philadelphia — Arrivals, 300 cases and 35 kegs extracted, approximately 1200 cases comb, all from New York State; approximately 100 cases local comb; no imported stock arrived. Demand moderate, market steady. Few sales Southern extracted; amber, 11-11½c per pound. New Yorks: quality only fair; very few sales of mixed grades; light amber to white, 19c per pound. Beeswax, demand slow, market steady, 37-38c per pound.

New York—Arrivals, 1 car California, 5 barrels Florida, 15 barrels Key West, 9 barrels Texas, 39 half-barrels Texas, 408 barrels Porto Rico, 871 barrels Santo Domingo, 216 barrels Cuban, 30 cases British Honduras. Market fair, demand moderate. Extracted honey: West India, $1.25-$1.50, mostly $1.35-$1.40 per gallon; California, dark, 12½-13c per pound; light, 14-14½c per pound. Comb honey, per 12 sections, $3. Export: demand slow; market quiet; no prices reported. Beeswax: Arrivals, 328 packages Cuba, 421 packages Santo Domingo. Market quiet, demand slow. Yellow stock, 38½-40c per pound; dark stock, 36-38c per pound.

Kansas City—Comb honey arrivals, 1 car Colorado, approximately 100 cases native by express. Extracted, 120 cans Colorado. Demand and movement moderate, market firm. Colorados: Comb honey, quality and condition good, 24-section cases, few fancy, $4.50; No. 1, $4.35; No. 2, $4.15. Extracted honey, white and extra light amber, 14-15c per pound; dark and extra dark, 10-12c per pound. Native comb honey: all sales in small lots; quality and condition good; 24-section cases, mostly $4.50. Beeswax, approximately 400 pounds arrived; demand limited, market steady; all sales in small lots; mostly 40c per pound.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

It is inferred that all readers have access to the book "A Thousand Answers to Beekeeping Questions." This will avoid duplication in answering, as the book contains answers to practically all questions ordinarily asked on beekeeping. Subjects not specifically treated, or which are not clear to the reader will be further explained in this department at the request of any subscriber.

Drones—Splints—Diseased Hive

1. Why do drones buzz around in front of a hive apparently anxious for bees to swarm, if drones do not mate with queens at swarming time?

2. Where do you get the splints you use for fastening foundation in the frame? Do you split them out by hand?

3. Would broom splints be heavy enough?

4. Would a hive that had bees die of foulbrood in it be safe to use again without fumigating , but painted on the inside?

PENNSYLVANIA.

ANSWERS.—1. I don't know. In some cases I think queens do mate at swarming time.

2. I bought them from the A. I. Root Co.

3. They might be heavy enough, but otherwise objectionable.

4. Some would think it unsafe, while some think such a hive can be safely used with neither painting no fumigation of any kind. I should not be afraid to risk it.

Keeping Foundation and Combs Over Winter

1. How is foundation kept over winter. Is it just as good the next spring?

2. How are empty combs kept over winter? Combs with uncapped honey? With capped honey?

ILLINOIS.

ANSWERS.—1. No special care is needed in keeping it over, and it will be good to use the next spring or five years later.

2. Empty combs may be kept almost anywhere, but it is well if they are allowed to freeze, so as to destroy any eggs or larvæ of the bee-moth. Combs with honey, either capped or uncapped, should be kept where it is warm and dry.

Granulated Honey in July

I beg to inquire if it would interest you as a beekeeper to know that my new comb honey, produced since the latter part of May, became badly granulated by the middle of July, a hive-body used as a super and containing about 60 pounds of otherwise first-class honey being practically all more or less granulated. I found some which could have been made only a few days, and still uncapped, where two frames had previously been removed, to be almost solid sugar. This occurred about the tenth of July. I found the same condition in the bottom of a number of other hives; however, have not as yet removed the section supers, but fear my entire crop is in like condition.

I have had experience with bees and honey here in this locality for the past twenty years and have never before known such a state of affairs, only occasionally a few of the last-made sections being more or less granulated when removed from the hive at Christmas time, which I credited to some late honey-plant.

As yet the source is all a mystery. However, I shall make an investigation of the matter for solution. VIRGINIA.

ANSWER.—Something of this kind has been reported before, but it is very unusual, and it would be interesting to know the source of the honey. Even then what could be done about it?

Granulated Comb Honey

1. Is there any way to prevent comb honey from granulating in cold weather? If so, how?

2. If granulated, is there any way it can be brought back to the liquid state.

MAINE.

ANSWERS.—1. There is no small difference in honey as to the matter of granulating, and I am not able to say about all kinds, but I know that some kinds can be kept through the severe freezing of a Northern winter without granulating or having the combs crack. I put some sections of clover honey in an attic where it was as cold as it had been hot in summer, but the combs kept beautifully. I suppose that the roasting of the summer ripened it so thoroughly that the freezing of winter could not affect it.

2. I doubt if there is any way to liquify the honey satisfactorily without melting the comb.

Clover Honey

You were asked in the last Bee Journal about sweet clover honey and you answered that you did not know much about it, so I am sending you a section by mail and swear this is pure white sweet clover honey, as I am located where clover is heavy, and when it is in bloom the bees seem to work on it altogether.

I had 175 stands spring count, and increased to 260. I expect to harvest six tons of honey or better. I am running for both comb and extracted. Tell us in your next Journal what you think of sweet clover honey.
WYOMING.

A CHURCH BUILT OF HONEY. GEO. F. BOWERSOX BELIEVES IN THE STRENGTH OF ADVERTISING. HE BUILT THIS CHURCH, WHICH STANDS ON A FOUNDATION 16x20 INCHES FOR EXHIBITION PURPOSES, AND IT ACCOMPLISHED ITS PURPOSE.

Answer.—The sample received is unlike what has been generally described as sweet-clover honey, as it has no greenish tinge and no vanilla flavor. Both honey and comb are remarkable for whiteness; indeed, in that respect it seems the most beautiful I ever saw. Whether it be genuine sweet clover or not, anyone who gets a crop of such beautiful honey is to be congratulated.

Clearing Wax—Queen Introduction

1. When fastening foundation in sections, a certain portion of the wax runs off the hot plate and becomes badly smoked and discolored. Do you know of any plan by which this wax could be freed from this objectionable color?

2. When extracting, will the flowing honey sufficiently lubricate the lower bearing of the reel, or should some other lubricant be applied?

3. In the spring of the year I usually place over each of my colonies a few combs with an excluder over the brood-nest. Last June, when very strong colonies would cast a swarm, there woudl be from half a dozen to fifty or more seemingly perfectly normal drone larvæ in these upper stories. How did the queen get the eggs above the excluder?

4. I had a poor queen in one colony. I killed her and placed the brood over a strong colony with a young and very vigorous queen, with excluder between; about a week or ten days later I examined this brood and was astonished to find a queen-cell with a freshly-laid egg in it. How did this get above when there was an excluder between the two hive-bodies? Did you ever have a similar experience?

5. I follow your plan when a swarm issues, removing the brood and preparing a hive so the swarm upon returning will occupy the original stand and I usually expect to find a young queen laying within about three weeks in the removed brood. This past season I found laying workers had begun their work prior to the time when I expected a laying queen. This happened in three cases. Is this unusual? Did you ever have similar experience?

6. In 1916 I had considerable difficulty in getting young queens to mate and return to the colony safely. I was informed by a beekeeper that this was the result of following the Miller plan of hiving the swarm on the old stand and removing the brood. He says this plan results in queens of weakened vitality on account of drawing the field bees to the swarm. Inasmuch as I have some of the most vigorous queens and consequently some of the strongest colonies in this locality, I, of course, do not agree with him. What do you think about it?
INDIANA.

Answers.—1. I don't know, but I should expect it might settle clear if merely melted and allowed to remain liquid for a considerable time, so as to have time to settle. About such things the Dadants know more in a minute than I do in a day, and they may have something to say.

(When fastening foundation in sections the sheet should be just allowed to touch the hot plate and slip off onto the section, without any loss of wax. Perhaps a few drops would be lost in the course of an hour. If beeswax is allowed to get overheated on a hot plate, it is burnt more or less, and it would be very difficult to give it back a good color.—C. P. D.)

2. Where honey touches, no other lubricant is needed.

(This is absolutely correct. But when you want to use your extractor again, after having used honey on it as a lubricant, you will find that it has gummed the bearings so as to make it almost impossible to turn the crank, especially if it has stood a long time. A little hot water will dissolve this "gum" without effort.—C. P. D.)

3. I don' t know. Could it be that the workers carried up the eggs?

4. I have had queen-cells reared in combs that were given empty over an excluder—I think two or three cases—and I don't know how to account for it unless the workers carried up the eggs.

5. I never had a like experience, I think, and I think it is very unusual.

6. The first queen-cell is sealed before the

APIARY AND HONEY HOUSE OF GEO. F. BOWERSOX AT PORTLAND, INDIANA.

swarm issues , and the only harm that could come to the young queen would be by being chilled in her cell. In that case I should expect some of the worker-brood would be chilled to death, and I never knew that to happen.

Cyprian Bees

1. In the August number one of the questioners said that he had a colony of pure Cyprian bees. I would like to get his name.

2. Is it too late to transfer bees in September? WEST VIRGINIA.

Answers.—1. John S. Kaspar, Solon, Iowa.

2. You might transfer in September or later, but it would be better to wait till spring, and perhaps still better, till swarming.

Increasing

1. In making increase could I put a hive with combs on a strong colony, leave it long enough to get full of bees, then move the old colony, leaving the new hive with combs on the old stand, then put in a queen in a mating cage?

2. Would this same plan work, only depending entirely on field bees coming back to the old stand? MARYLAND.

Answers.—1. It might work well if brood were in the combs left on the old stand.

2. Yes; but it would be more sure of success if the queen were left on the old stand.

Foulbrood—Queen Taking Wing

1. Having found American foulbrood in my colonies and wanting to clean them up, I asked a prominent beekeeper and supply dealer what was the way to do it. He advised to give full sheets and put the diseased colony over a new hive with bee-escape between and save the young bees. I did this about the middle of August. I saved the young bees, but I find I still have the foulbrood in the new brood-frames. I burned up everything in the old hive as soon as young brood hatched and went below. The other two hives were shaken on foundation. Everything burnt. The last two show no sign of disease. What is the matter with the first case?

2. I bought three Italian queens, wishing to have good young queens in the above colonies. After killing the old queens I introduced young queens and on the third day I opened up hives to see how they were doing. Upon opening one of the hives I found the young queen on the third frame taken out and as soon as the frame was raised out of the hive the queen took wing and flew away. Everything seemed normal in the hive. What caused her to fly away? OHIO.

Answers.—1. The matter was that there was no treatment to make a cure. The bees could carry the disease through the excluder just as well as if no excluder had been there.

2. She was probably frightened. Such a thing happens rarely. If you remain quiet the queen usually returns.

Thwarting Swarming

Please make such comment as will occur to you upon the experiences I had with the excluder plan of thwarting swarming, as set forth in your "Fifty Years." Last year I tried it, exactly as you advise. "Empty" frames I interpreted literally, in that the frames I used were entirely empty. The result was in every one of the five cases, that there was an immense lot of work by the bees in the part of the hive-body left vacant, leaving a great mess of honey and brood in irregularly built combs, making it quite a task to save what bees I could. It later on appeared that in four cases, the queen remained intact, the fifth seemed soon to have re-queened itself, and to the best of my knowledge there was not any swarming, only every one of the frames was filled with brood and as the frames were not wired, they had to be carefully handled.

This year I tried the plan again and used wired frames, placing in each hive as many as seven, so as to make sure that whatever work was done would be in those wired frames. This year this was done rather late in the season, as not before did the bees seem to feel like swarming. The season, as a whole, having been decidedly poor, work in the frames was done in but half of the colonies, and in such the queens under the excluder produced quite a lot of brood and eggs. There was also a lot of drone-comb, so now I think that one ought, not only to use wired frames, but also frames with foundation, so as to have the building done most satisfactorily. My question now is, supposing that one leaves the excluder arrangement as made, twelve days at least and, if then there is in the lower hive-body quite a lot of eggs and brood, would it be right when reducing the colony to one hive-body, to give to that one all the brood of both bodies? Would doing this leave ineffective the work for preventing swarming? The question has arisen with me whether it will really thwart swarming if there is as little hindrance to the queen going on with egg-laying, as is the case when one gives frames with full foundation below; all of which, when included with the re-consolidation after twelve days at least, would seem to leave with the colony as much brood and eggs as it would have had, even if there had been no contra-swarming manipulation whatever? On the other hand, in my experience at least, both Miller and Dadant are not warranted in giving below either no frames at all, or but two or three "empty" frames. PENNSYLVANIA.

Answer.—When I read your letter I was very much puzzled to understand why your bees should act so differently from mine. I have had experience with very many more than five cases, and never had any comb built outside the few frames given, and never enough brood to be counted a serious loss if all were taken for wax. A possible explanation comes at the last, when you speak of leaving the queen in the lower story with the few frames and the rest of the hive vacant until "after twelve days, *at least*." I never tried it longer than a week to ten days. In my book I speak of no longer time—but I can easily believe that after the ten days the bees would do a whole lot of work in the next two or more days.

Answering your question, if you should leave the queen below for twelve days or more, and then put in the lower story the brood of both stories, I think it would work all right, and be just as effective in preventing swarming, only you would have to look out for queen-cells reared in the story not having the queen.

As regards not being warranted in giving below two or three empty frames, I can only say that I have done it many times, and it worked all right. But I should not feel warranted in leaving them thus for "twelve days at least."

Feeding Honey—Strengthening Colonies.

1. When giving solid combs of honey at this time of the year, in what part of the brood-chamber would you place them?

2. Would you advise breaking the cappings of the lower part of the comb?

3. Would you advise buying queenless bees from the south in the early spring to assist weak colonies?

4. How would you introduce those bees?

5. Would you cage the queen?

6. How many acres of alsike grown for seed would you consider necessary to give a good surplus under average conditions? OHIO.

Answers.—1. I don't suppose it makes very much difference, and they might as well be put somewhere near the center.

2. No.

3. Yes; but not too early. Time enough after bees are flying freely.

4. I've had practically no experience in introducing such queenless bees; but should expect no trouble in introducing them without any preliminaries, provided their honey-sacs are well filled, as they are likely to be if their stores have not run short.

5. The bees being consciously queenless and in a panicky condition, there seems no need to cage the queen, but in case the bees to be introduced are two or three times as many as the bees already with the queen, it might be no harm to cage her for two or three days.

6. I don't know. It's a hard thing to tell anything about. There is no sort of definite knowledge as to how much potential honey there is in an acre of alsike But if there is less than the bees can gather from other sources, then every drop that can be gathered from alsike will be so much added surplus.

Newspaper Plan of Uniting

I wished to unite two colonies, so I placed one above the other with a thickness of newspaper between them, killing the queen in the upper one. Three days later they had gnawed through the paper and apparently had the colony spirit. Wishing to remove the top hive without bees, I put a bee-escape between the hives. I neglected to look after the colonies for about two weeks, thinking they would all go to the lower hive and needed no attention. Upon opening the top hive I found all of the bees dead, having died apparently of starvation, for there was no honey in the cells. What do you think was the reason for them not uniting? OHIO.

Answer.—It is possible that cool weather was to blame. The paper was gnawed through, and the bees of the two hives were apparently on good terms. Then you put a bee-escape between the two hives, which separated them to a large extent, and a spell of cool weather occurring, the bees in the upper hive starved rather than to leave the cluster. Of course, that's only a guess, but it's the best guess I have on hand.

Questions From China

1. Are there any queen-breeders in the Philippine Islands?

2. Can the queen and the nuclei be sent from America to Shanghai by mail?

3. Are there any differences between three-banded and golden Italian queens and their workers? CHINA.

Answers.—1. I don't know of any, and yet there may be.

2. I don't know, but under present war conditions it is not very likely they could be sent successfully.

3. The workers of three-banded Italians have three bands, and the queens are more or less dark. Indeed, some queens may be as dark as black queens, while their workers are as light as the workers of the lighter queens. The workers of goldens are supposed to have five yellow bands, and the queens are likely to be very yellow.

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FOR SALE—In their season, Italian queens, bees and honey. For prices on bees and queens send for circular, or see our large add. in May or June issue. H. G. Quirin,
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GOLDEN QUEENS that produce Golden wokers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1 each; tested, $2; breeders, $5 and $10.
2Atf J. B. Brockwell, Barnetts, Va.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1; 6, $5; tested, $3; breeders, $5 and $10.
C. W. Phelps & Son,
3 Wilcox St., Binghampton, N. Y.

BEES WANTED—50 to 100 or more colonies of bees in movable-frame hives. Must be strong and healthy and free from disease. Send full description and price.
A. F. Lewis, Le Roy, Minn.

WANTED—One to two hundred colonies of bees. A. M. Eggerth, Guttenberg, Iowa.

MY BRIGHT ITALIAN QUEENS will be ready to ship after April 1 at 75c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Greenville, Ala.

FOR SALE—110 colonies bees in 10-frame dovetailed hives, with inner covers, Acme covers, and all on combs built from full sheets wired foundation. This is a 100 per cent paying investment. Price and description on application, Extracted. Location with outfit.
Custer Battlefiel Apiaries, Hardin, Mont.

FOR SALE—Fifty colonies Italian bees in 10-frame dovetailed hives, with one deep super and extracting combs and with wood and zinc excluders. Price, $6 each, at the bee-yard. If you mean business enclose 2-cent stamp for reply. A. J. Diebold, Seneca, Ill.

FOR SALE—A splendid apiary of 100 colonies of Italian bees in 8-frame hives, in one of the best locations for quantity and quality of honey. No disease in this part of Nevada. Yard is fenced. There is a comb-honey house, extracting house on two levels, 8-frame power extractor, one h. p. engine. Have unlimited supplies, both comb and extracting. Price of bees, $6 per colony for quick sale. Hives will be left full of good honey. Other stuff, as much as desired, at bargain prices. Everything of the best and in good condition.
J. E. Patton, LaMoille, Nevada.

FOR SALE—Having been drafted, I offer for sale 25 colonies of bees in two-story 10-frame hives for 4¼ plain sections; combs all built from full sheets wired foundation, but three hives which are built from starters. Hives of Root and Lewis make and painted white. Bees will be ready for shipment after the fall flow. Hives will be heavy with honey and bees are all strong and healthy. Price, $5 per colony. Harry Brown, R No. 2, Jerseyville, Ill.

FOR SALE—Three hundred and fifty colonies of bees in ten-frame dovetailed hives; all in good condition and in a good locality. For particulars write to F. W. Pease
Harpers Ferry, Iowa.

HONEY AND BEESWAX

RENDER your own combs and cappings without trouble or expense; make foundation for yourself and others easy. Address,
J. J. Angus Grand Haven, Mich.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTER—Beeswax at all times in any quantity, for cash or in exchange for supplies.
Dadant & Sons, Hamilton, Ill.

FOR SALE—One or 100 barrels mild flavored light amber honey just right for blending with northern honeys. For sample and price f. o. b. New York address.
Elton Warner's Apiaries, San Juan, Porto Rico.

FOR SALE—Clover, heartsease, No. 1 white comb, $3.60 per case; fancy, $3.75; extra fancy, $4.00; 24 Danz. sections to case, extracted, 120-lb. cases, 15c per lb.
W. A. Latshaw, Carlisle, Ind.

CHAS. ISRAEL BROS. CO., 486 Canal St., New York. Established 1878. We are in the market for both comb and extracted honey. Send prices delivered New York; state the quantities you have and how packed, and send samples.

WANTED—White or light amber extracted honey in any quantity. Kindly send sample, tell how honey is packed and your lowest cash price. E. B. Rosa, Monroe, Wis.

FOR SALE—Michigan's best white extracted honey in packages as desired; also comb honey.
A. G. Woodman Co., Grand Rapids, Mich.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—To buy, a quantity of dark and amber honey for baking purposes.
A. G. Woodman Co., Grand Rapids, Mich.

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PICK UP some easy money gathering butterflies, insects. I buy 750 kinds. Some $1-$7. Intensely interesting. 2-c stamp brings prospectus. Get posted. Sinclair,
Box 244, D., 41, Los Angeles, Calif.

SIBERIAN FUR FARM, Hamilton, Canada, breeds foxes, marten, mink, ermine, skunks and black Siberian hares. Information and price list free. Write address plainly.

FOR SALE—Best quality foundation.
J. J Angus, Grand Haven, Mich.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

FOR SALE—Queen Excluders, new style; Write for prices and photo.
D. G. Little, Hartley, Iowa.

FOR SALE—100 second-hand 5-gal. honey cans; in good condition.
John Kneser, Hales Corners, Wis.

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HONEY LABELS—We have just issued a new and up-to-date catalog of honey labels and stationery. Write for your copy. Neat labels and quick delivery guaranteed.
American Bee Journal, Hamilton, Ill.

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WANTED

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—To hear from parties having foundation mills to sell, either new or needing slight repairs.
J. J. Angus Grand Haven, Mich.

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Crop Reports and Market Conditions

CROP AND MARKET REPORTS

There is little to report since our last issue as to change in estimates of crop totals. Many reporters state that they have had only about a third of a crop, while many others are nearly normal. A slow fall flow throughout the middle west has put the bees in good shape for winter and made some little surplus.

HONEY ON HAND—SALES—PRICES ASKED

A majority of beekeepers reported all or nearly all honey sold and at satisfactory prices. Many others stated they had still some on hand but that it was moving freely to regular markets.

The demand for honey is still excellent, both from the local buyers and from the larger buyers. The larger buyers, however, seem slow to accept offers of 15 cents made by the beekeepers, though they are more than willing to take all that is offered at 12½ to 13 cents for white honey. There is still some demand for export, for which 15 cents is being paid f. o. b. New York.

One party in Michigan is holding a car load for which he was offered and refused 15 cents. Several other beekeepers are holding amounts from 5,000 to 15,000 pounds to "see where the price will go." Still several others have sold at 15 cents, and some few as high as 17 cents wholesale for white extracted.

Following is a partial list of honey still held by our reporters and prices expected:

Colorado,10,000 pounds white, asking 15 cents.

Colorado, 2 cars amber, asking 12½ to 14 cents.

Montana, 22,000 pounds white extracted, asking 15 cents.

Idaho, 1 car white extracted, asking 14 cents.

Wyoming, 40,000 pounds white extracted, asking 15 cents (large buyers have offered 12½ cents for this lot).

Idaho, 10,000 pounds white extracted, asking 13½ cents, containers to be furnished by purchaser.

California, 5 or 6 tons, asking 12½ cents. It is light amber.

It is true that the large buyers are slow to buy at the prices at which this honey is being offered. When we look at the other side of the matter, however, there is less honey right now in the hands of the beekeepers, probably, than there was in January last year. Without a doubt comb honey is practically all out of the producers' hands. It is now selling at from $4.00 to $5.00 per case for No. 1.

If the local demand for honey continues, and there is little reason for a change, many small beekeepers will be out of stock and will have to buy to supply customers. Such stocks as are left on hand should be able to command, surely, prices as asked above.

CONDITION OF HONEY PLANTS

If we are to judge of the crop next year by the reports of honey plant conditions coming in, then we are in for a crop in 1918 that will help maintain bumper yields during the war period.

Throughout the whole East, and the central West reports are that plants are in much better shape than a year ago, and in many instances even better than in the fall of 1915, when all reports indicated a good yield for the following year.

Even in the West, Colorado and Idaho especially, where the plant condition in the fall is not taken as a criterion, many reports are to the effect that sweet clover, that is the young clover, is extremely thick, which would tend toward a larger yield from this source next year.

The larger part of Texas is still without sufficient rain and conditions are not flattering. Through the rest of the South honey plants are about normal, as they are in other parts of the country not especially taken up.

CONDITION OF BEES

In most places bees are going into winter in good shape. New York reports colonies as a little short of feed, as do reports coming in from parts of Michigan and Wisconsin. The fall flow has helped to build up colonies in the central States, and the long protracted fall has also allowed a slight flow in the West, which has added young bees to the winter cluster. One report from California is to the effect that bees did not breed up this fall as usual, with the likelihood that they will not come through in quite as good shape next spring. Otherwise conditions are about normal.

HONEY AND BEESWAX

New York, October 20.—Comb honey: On account of the season being late this year, arrivals have been slow coming in, and while there is a fair demand, it is not as good as in former years, on account of prices asked being so much higher. We quote No. 1 and fancy white at from $4.50 to $4.75; lower grades, mixed and dark, at from $3.75 to $4.25, according to quality, in crates of 24 sections each well filled. Extracted honey is in good demand, with fancy grades of white selling at from 14c to 15c; lower grades, mixed and dark, at from 12c to 13c. West India average quality at around $1.35 to $1.45 per gallon, duty paid, according to quality.

Beeswax market is easier at from 33c to 36c per pound, as to quality.

HILDRETH & SEGELKEN.

Chicago, Oct. 18.—In regard to the honey market, it is just opening up. We had about 100 cases of small lots, just in, which sold from 18c to 20c per pound, and the market is quotable at these prices. In extract honey the market is from 14c to 14½c. Beeswax from 35c to 37c for the best grades. We look for high prices to prevail on honey the entire season. We sold about 8 carloads last year and expect to handle 10 cars this year.

COYNE BROTHERS.

San Antonio, Oct. 16.—Practically no fall flows of honey are in prospect in Texas and nearly all honey has been sold. There are no carlot offerings. Local lots in the hands of producers are bringing 12 to 15c, extract basis. Wax is very firm. Few offerings at 30c cash and 32c exchange.

SOUTHWESTERN BEE COMPANY.

Chicago, Oct 17.—The market has been active, receipts being taken upon arrival, so that there has been no accumulation of either the high or low grades.

Fancy and A-1 grades of comb honey are selling at 22 to 23c per lb.; No. 1 at 20 to 21c per lb. No ambers have been offered, but would bring within 1c to 3c per lb. of the white grades. Extracted clover is selling freely at 15c per lb., with clover and basswood bringing the same price, whether individual or blended. Different amber grades are from 1c to 5c per lb. less, according to color, flavor and body. Barrels bring within 1c per lb. of that in the five-gallon cans.

Beeswax is without material change, bringing from 35c to 37c per lb., according to color and cleanliness.

R. A. BURNETT & Co.

Kansas City, Oct. 18.—The honey market is rather slow. Receipts are a little heavier and prices a little lower. No. 1 comb honey we are quoting at $4.25, No. 2 at $4.10. Extracted white is quoted at 15c a pound and light amber at 14c, and dark amber at 12 to 13c. This is in 60-pound cans.

The market on beeswax is 40c.

C. C. CLEMONS PRODUCE COMPANY.

Denver, Oct. 17.—We are at present selling new honey to retailers at the following prices: No. 1 white comb honey, per case of 24 sections, $4.50; No. 2, at $4.00. Extracted white, according to quantity, 15c to 16c. Light amber, 14c to 15c.

We are buying beeswax at all times and are at present paying 38c cash and 40c in trade for clean yellow wax, delivered here.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

Western New York Meeting.

The annual meeting of the Western New York Honey Producers' Association will be held at the Genesee Hotel, Buffalo, N. Y., on Tuesday and Wednesday, November 13 and 14, 1917. All beekeepers are welcome and invited to be present. An interesting program has been prepared as follows:

Nov. 13, 10:30 a. m.—
Call to order by the President.
Secretary-Treasurer's reports.
"Wax Rendering"—C. L. Hershiser, Kenmore,, N. Y.
1 p. m.—
Appointment of committees.
"Beekeeping as a Business"—J. L. Byer, Markham, Ont.
"Producing Fancy Comb Honey"—S. D. House, Camillus, N. Y.
"Does It Pay to Recommend a Minimum Selling Price for the 1917 Honey Crop?"
Discussion.
Wednesday, Nov. 14; 10:30 a. m.—
"Rearing Good Queens"—Chas. Stewart, Johnstown, N. Y.
"Which Shall We Do, Keep More Bees, Keep Better Bees, or Keep Bees Better?"—E. R. Root, Medina, Ohio.
Discussions and Questions.
1 p. m.—
Election of Officers.
Reports of Committees.
New Business.
"Preparing for a Crop of honey"—J. L. Byer, Markham, Ont.
"Bee Diseases"—By State Inspector.
Question Box.
Adjournment.

WILLIAM F. VOLLMER,
Sec'y.

The Arkansas Valley Beekeepers' Association of Kansas will hold their annual meeting at Witchita, Kans., November 23 and 24. A large attendance is desired.

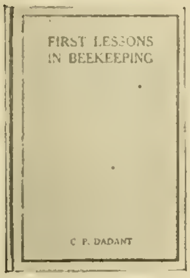
J. L. PELHAM, Sec'y.

START RIGHT

“First Lessons in Beekeeping”

By C. P. DADANT

Editor of the American Bee Journal



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May save you many pounds of honey, many wrong steps. It would be worth dollars to you. Yet here you have a thousand of these questions answered in that latest of bee books

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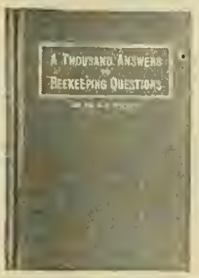

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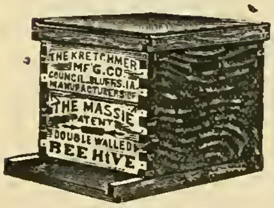
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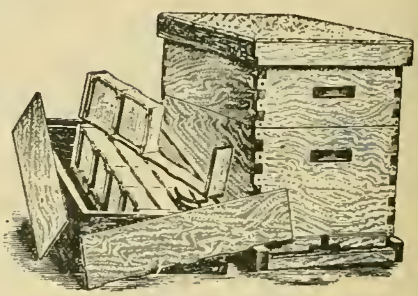

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Medina, Ohio

Statement of the Ownership, Management, Circulation, Etc.

of AMERICAN BEE JOURNAL, published Monthly at Hamilton, Ill., for October 1, 1917.

STATE OF ILLINOIS, } ss.
County of Hancock. }

Before me, a Notary public in and for the State and County aforesaid, personally appeared M. G Dadant, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown above in the caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations,.

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher—American Bee Journal, Hamilton, Illinois.
Editor—C. P Dadant, Hamilton, Illinois.
Managing Editor—None.
Business Manager—M. G. Dadant, Hamilton, Illinois.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give the name and names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

C. P. Dadant, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
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3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are (If there are none, so state):

None.

That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also in cases where the stockholder or any security holder appears upon the books of the company as trustee or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) M. G. DADANT,
Business Manager.

Sworn to and subscribed before me this third day of October, 1917.
(Seal) T. R. KLAY.

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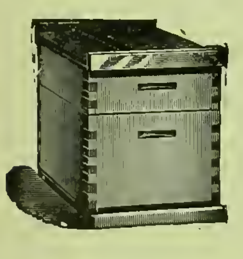

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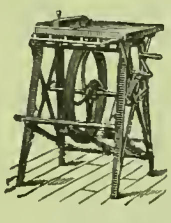

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AMERICAN BEE JOURNAL

DECEMBER, 1917

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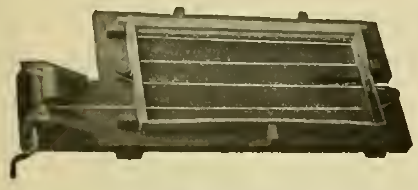

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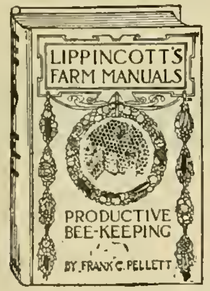

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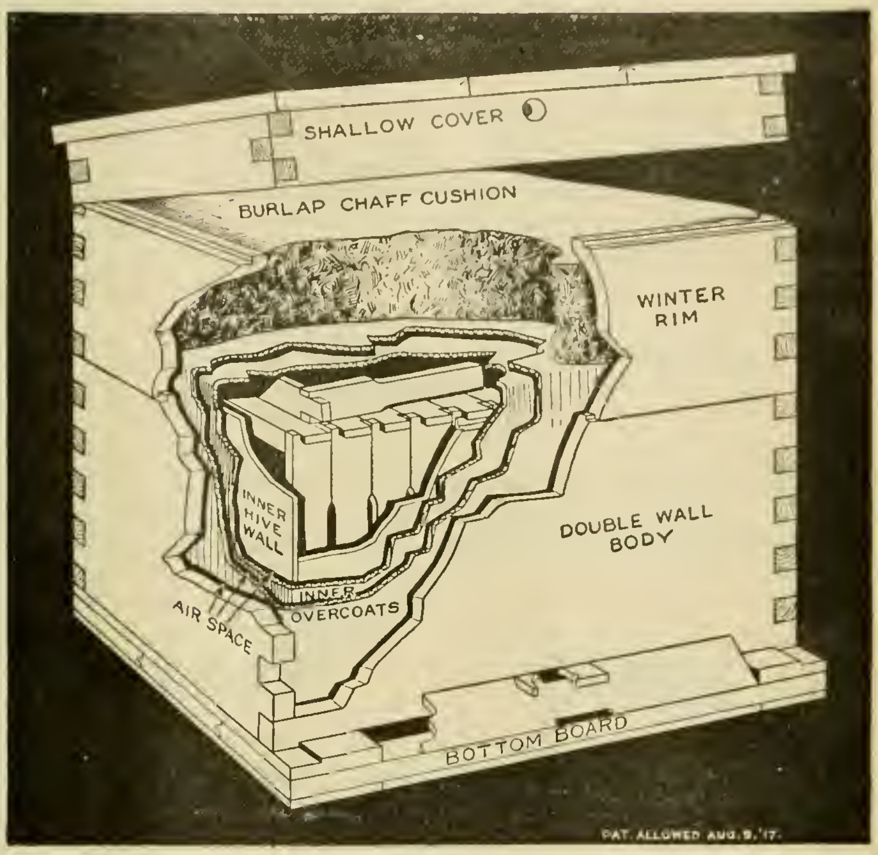

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Possibly, however, you have lost sight of the fact that it is greatly to your interest to get in your orders for bee supplies now.

Freights are Slow The congestion of last year may be repeated. Many beekeepers who ordered their supplies in February were barely able to get delivery in time for the white clover flow. Others had to cancel orders, and still others had supplies arrive after the critical storing period was past. *You cannot afford to let your bees wait a day on delayed freight shipments.*

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No? But are you throwing away old combs, small lots of cappings, or else beeswax scrapings and propolis from the tops of your frames when you clean them? If not, perhaps you are melting up your combs in an old-fashioned way and getting only about half the wax out of them.

Many beekeepers this year secured their season's supply of

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by sending in their combs and cappings to be rendered into beeswax and made up into foundation. Our high-pressure steam outfits get all the wax possible, save these same beekeepers an unpleasant job and return more beeswax in the shape of foundation than they could get by the extra work themselves. If you prefer, we will pay you *Highest Cash Price* for all beeswax rendered.

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The season of 1917, just closed, has been a most unusual one. Beekeepers who did not fortify themselves early in the season by securing their hives, sections and other goods and having their equipment ready for the bees, found that when the honey season was upon them that they were up against the following conditions:

EVERYBODY WANTED BEE GOODS—DEALERS HAD DEPLETED STOCKS ON ACCOUNT OF THE UNUSUAL DEMAND—MANUFACTURERS WERE SEVERAL WEEKS BEHIND ON ORDERS—THEIR FACTORIES WERE WORKING OVERTIME, SOME BEEKEEPERS WERE DELAYED, SOME DISAPPOINTED, SOME GOT THEIR GOODS WHEN IT WAS TOO LATE.

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REMEMBER, IN HARMONY WITH THE GENERAL CALL MADE BY THE PRESIDENT, ALL BEEKEEPERS NOW OWE IT TO THE NATION, IN ORDER THAT BEEKEEPING MAY FULFILL ITS HIGHEST OBLIGATION, TO REDOUBLE THEIR EFFORTS TO INCREASE THE IMPORTANCE OF BEEKEEPING AS AN AGRICULTURAL INDUSTRY WHICH CONSERVES A VALUABLE NATIONAL RESOURCE AND WHICH PRODUCES A NON-PERISHABLE, CONCENTRATED, WHOLESOME FOOD WHICH PLAYS A VERY IMPORTANT PART IN THE ENDURANCE OF ANY NATION.

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AMERICAN BEE JOURNAL

Vol. LVII—No. 12 HAMILTON, ILL., DECEMBER, 1917 MONTHLY, $1 A YEAR

THE SAGES OF CALIFORNIA

Notes on the Plants Which Furnish Most of the Honey on the Pacific Coast

By Frank C. Pellett

WHEN sage is mentioned, we of the east are likely to think of the common garden sage, *Salvia officinalis,* which for at least three centuries has been cultivated for its aromatic leaves. Of this there are several varieties, some with broad and some with narrow leaves. The garden sages are good honey plants, but seldom sufficiently abundant to amount to much as honey producers. The honey from the garden sage is said to be nice and white like that from catnip or motherwort.

The name sage is derived from its supposed power to make people wise by strengthening the memory, for which it was used in ancient medicine.

There are upwards of five hundred species of sages, widely distributed in the temperate and warmer regions of both hemispheres. Probably most of the species yield honey, although but few are known to be important. Rayment mentions the wild sage, *Salvia verbenaca,* as introduced into Australia from Europe, but now yielding honey during the dry months of the year. (Money in Bees in Australasia). There are more than two hundred species known to occur in Mexico and Central America and it is very probable that when beekeeping is developed on a commercial scale in those countries that the sages will be found to be very important honey plants.

Since practically all sage honey that goes to market in America is from California, the sages from that State are of first importance. Sage is known to occur in other western States and the question is sometimes asked whether any honey is secured from this source elsewhere. In answer to this question Mr. J. E. Miller, of Caldwell, Idaho, writes, in Gleanings in Bee Culture (Sept. 15, 1908), as follows:

> "My neighbor, Mr. Garfield, experimented with one colony of bees by taking it eight or nine miles away from alfalfa or other cultivated fields, and setting it among the white sage. He went out to look after it every week and took fresh water. We do not know the exact amount of honey the bees gathered, but they did fully as well as those left at home near the alfalfa. The honey was of that water white color peculiar to California sage honey. Mr. Garfield sent samples to California and it was pronounced A 1 white sage; so we are convinced that the white sage of South Idaho does yield just as much and just as good honey as that of any other State."

THE HYBRID SAGE OF CALIFORNIA.
(Photograph by Homer Mathewson.)

It is probable that one or more species of sage occur in nearly every State, but they increase in abundance westward. In the arid country west of the Missouri river they become sufficiently common so that an appreciable amount of honey might be expected in many localities. It is quite likely that sage honey in small amounts is mixed with honey from other sources, and so not detected, in many localities outside of California. The fact remains, nevertheless, that sage, as an important source of surplus, is not reported outside of that State.

The quality of sage honey is of the best, being water white in color, of a heavy body and delightful flavor. Since it does not granulate, it is much sought for by bottlers in the east, who blend it with clover or alfalfa. There are many who regard sage honey as the finest in the market. In this connection A. I. Root in an early edition of his A B C of Bee Culture, wrote:

> "I well remember the first taste I had of the mountain sage honey. Mr. Langstroth was visiting me at the time, and his exclamations were much like my own, only that he declared that it was almost identical in flavor with the famed honey of Hymettus, of which we had received a sample some years ago. Well, this honey of Hymettus, which has been celebrated both in prose and poetry for ages past, was gathered from the mountain thyme, and the botany tells us that thyme and sage are closely related."

Although there are several species of sage which yield honey in California the quality does not differ materially, as far as can be ascertained from printed reports. It is all described as "water-white, unexcelled flavor, of heavy body and does not granulate."

Prof. A. J. Cook wrote to the

American Bee Journal (June 21, 1906) concerning the sage as follows:

"Chief among the honey-bearing mints are the incomparable sages of California. These are not excelled even by the clovers or linden. The honey is white, delicate of flavor, and must ever rank among the best in appearance and quality. Not only this, but the quantity is often phenomenal. This comes from the fact that flowers are borne in long racemes or compact heads, and as the separated flowerets do not bloom all at once, but in succession, the plants are in bloom for weeks. The sages, then, are marvelous honey producers, first, because of the generous secretions of each floweret, and second, because of the immense number of these flowerets and the long period of bloom."

At another time Mr. Cook wrote that the honey from all the sages is so much alike that it would be indistinguishable. (American Bee Journal, Aug. 3, 1905).

Richter, in his Honey Plants of California, speaks of the white sage, *Salvia apiana,* Jep., as "very common on the dry plains toward the foothills, and ascending these to about 3,000 feet."

Writing in Gleanings in Bee Culture, P. C. Chadwick describes a journey which he made in the San Bernardino mountains with the intent to find out the highest elevation at which bloom could be found in sufficient quantities to support bees. Up to an elevation of 7,000 feet he found white sage in abundance, and all alive with bees. (Western Honey Bee, Sept., 1914.) Richter gives its range as common from Santa Barbara county southward, blooming from April to July. "'As abundant as the black sage, but not as good a yielder, nor has the honey as fine a flavor."

Black sage, *Salvia mellifera* Greene, also known as ball sage, or button sage, is generally credited as being the principal source of sage honey, most of the honey which goes to market under name of white sage, being produced from this plant. Quite probably it is the best honey plant on the Pacific Coast. Richter says of it: "As a general rule every fifth year an excellent crop is obtained, and every third or fourth year a total failure is experienced, the flow being dependent upon winter rains, with warm spring quite free from cold winds and fog. When in bloom a certain amount of warm weather is required before it produces nectar."

The range of black sage is given as "Mt. Diablo, Los Trampas Ridge, near Hayward, San Mateo county, Glenwood and Brieta, southward to Southern California. April-May." Jepson. "Coast ranges and ascending to 5,000 feet in the San Bernardino mountains. March to June. San Diego County, February to May."

Mr. J. E. Pleasants, of Orange, California, writing in American Bee Journal (June, 1914), describes the peculiarities of the sages, as follows:

"The black sage is king of them all. When climatic conditions are favorable I think black sage can be relied upon to produce more 'gilt edge' than any other plant in the West, and for body and flavor it is hard to excel. It blooms for weeks. The blossom is small and inconspicuous, but what a flow of nectar it can yield.

"The white sage is a much prettier plant. Its soft, grey leaves and tall blossom spikes make it quite showy, while its pleasing aromatic odor breathes the very essence of wild perfumes. But this queenly plant is much more inconstant than its plainer sister. Some years it produces a good harvest, others very light.

"The silver, or purple sage, which has silvery leaves and brilliant light purple blossoms, is usually a good producer, but is much restricted as to locality."

The purple sage *Salvia leucophylla,* also called white-leaved sage, or silver sage, is reported as a good yielder, although not as abundant as either of the foregoing species. The Richter catalogue gives the range as occasional in the foothills of the Santa Monica and San Fernando mountains, April to July, and from San Luis Obispo to San Diego counties and not extending inland beyond the coast ranges.

Salvia amabilis, loving sage, is reported from Santa Barbara March-June, but probably not important.

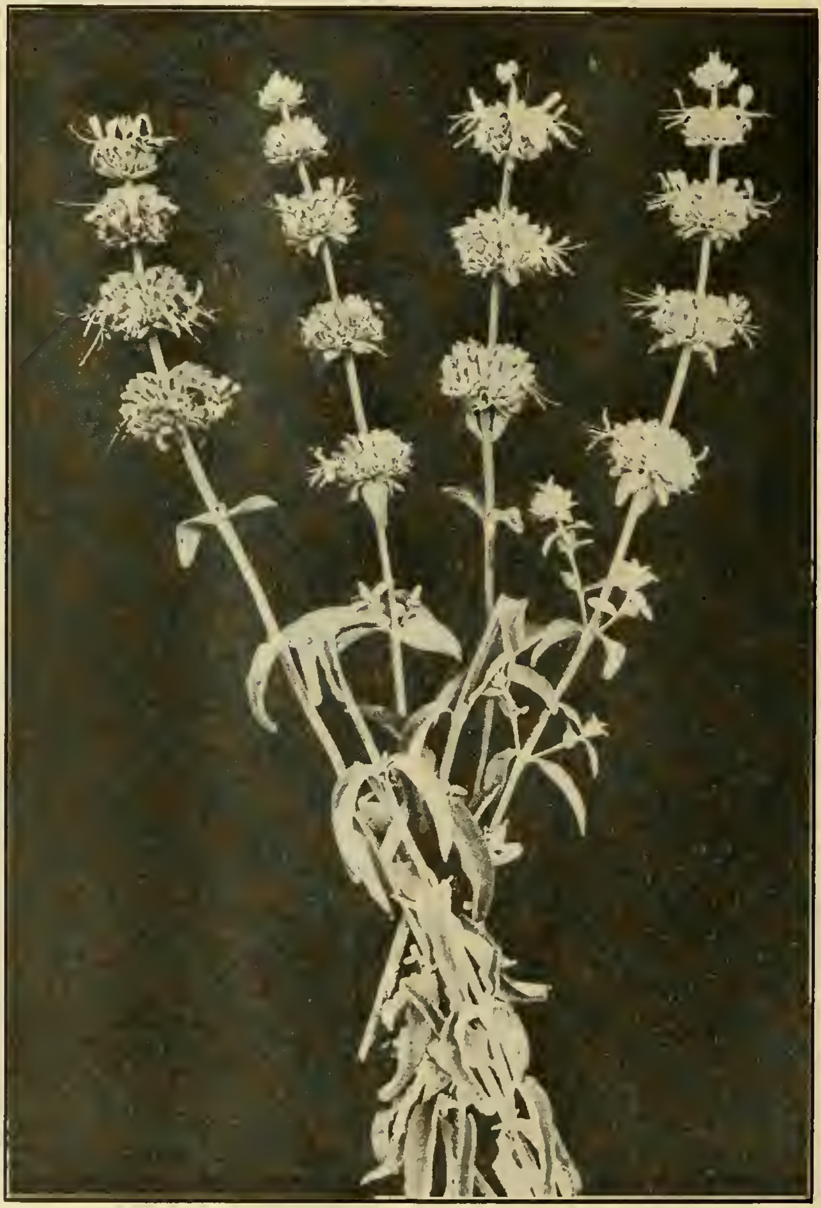
Salvia earduaeca, thistle or annual sage. "Inner coast range valleys, and throughout the San Joaquin valley, Southern California, June." Jepson. "A well-known honey plant." Richter.

Salvia columbariae, annual sage. "Throughout the coast ranges, Sierra Nevada and Southern California, on hill and mountain slopes." Jepson.

Salvia sonomensis,, Greene, creeping sage. "Montana species at middle altitudes. Ramona mountains west of Calistoga, Mt. Shasta, Calaveras and Mariposa counties, San Diego County. May." Jepson. "Also June, Sierra foothills from Sierra to Inyo counties, main source of honey in many districts." Richter

Concerning the regularity of yield from sage, Mr. P. C. Chadwick wrote in Gleanings in Bee Culture (Jan. 1, 1911), as follows:

"South of the Tehachapi Mountains lies practically the entire sage of our State, notwithstanding eastern people and many of our westerners term every form of small growth on the vast slopes of the Rocky Mountains 'sage brush.' There is no denying that the button (or black) sage is, of all honey plants, our chief surplus producer. Neither does it average a crop more often than every other year, regardless of rainfall; for it seems necessary, from its semi-arid nature, to be dried out or rested before it comes back to its prime yielding condition. I have seen it return



BLACK SAGE, THE FINEST HONEY PLANT ON THE PACIFIC COAST.
(Photograph by Homer Mathewson.)

some surplus for three consecutive seasons; but the middle season was not what could be considered a crop, even after a sufficient rainfall."

Again he writes to the same journal to the effect that the sage ranges soon give place to other crops (Dec. 15, 1911):

> "If I should predict that thirty years hence the sage ranges of California would be almost a thing of the past there would doubtless be criticism of my views; but I firmly believe that we shall face such a condition, for emigration to this part of California is increasing rapidly Hillsides are yielding to the plow, where twenty years ago it would have been thought almost impossible."

Some writers give two hundred pounds per colony as a fair average in a good sage year, so that with even one good year in three it comes well up with the yield of many plants more constant in their production.

It is through the kindness of Mr. Homer Mathewson, of Kentucky, that we are able to present to our readers the pictures of the sages in connection with this article. One picture is of a hybrid sage. Crossing of the various species is said not to be uncommon.

WHITE SAGE, AN ABUNDANT PLANT, BUT UNCERTAIN IN ITS YIELD.
(Photograph by Homer Mathewson.)

What is in a Name?

By A. B.

WHILE hunting for the name of a town in a "shippers'" guide I came across the name "Beehive," Alabama. My curiosity was aroused to ascertain how many towns or railroad stations bore names relating to bees or their products in the United States.

There are just 73 places with such names, as follows:

11 "Bee," in Alabama, Arkansas, Georgia, Minnesota, Nebraska, Ohio, Oklahoma, Tennessee, Virginia, Washington and West Virginia.
1 "Bee Bayou," in Louisiana.
1 "Bee Branch," in Arkansas.
1 "Bee Camp," in Indiana.
1 "Bee Cave," in Texas.
3 "Bee Creek," in Illinois, Missouri and Texas.
1 "Bee Fork," in Missouri.
1 "Bee Grove," in Indiana.
1 "Beegum," in California.
4 "Beehive," in Alabama, Colorado, Georgia and Montana.
1 "Beehive Crossing," in New York.
1 "Bee House," in Texas.
1 "Bee Hunter," in Indiana.
1 "Beelake," in Mississippi.
1 "Bee Lick," in Kentucky.
1 "Bee Log," in North Carolina.
1 "Bee Ridge," in Florida.
1 "Bee Spring," in Kentucky.
1 "Beetown," in Wisconsin.
2 "Bee Tree," in Maryland and North Carolina.
2 "Beeville," in Tennessee and Texas.
1 "Drone," in Georgia.
2 "Honey," in North Carolina and Washington.
1 "Honey Bee," in Kentucky.
1 "Honey Bend," in Illinois.
2 "Honey Brook," in Pennsylvania.
1 "Honey Camp," in Virginia.
7 "Honey Creek," in Alabama, Georgia, Illinois, Indiana, Iowa, Pennsylvania and Wisconsin.
2 "Honeycutt," in North Carolina and Tennessee.
1 "Honey Ford," in North Dakota.
3 "Honey Grove," in Kentucky, Pennsylvania and Texas.
1 "Honeyhill," in South Carolina.
3 "Honey Island," in Louisiana, Mississippi and Texas.
1 "Honey Landing," in Alabama.
1 "Honey Pod," in North Carolina.
1 "Honeymans," in Oregon.
1 "Honeymans Spur," in Oregon.
1 "Honey Pot," in Pennsylvania.
1 "Honey Springs," in Texas.
2 "Honeyville," in Utah and Virginia.

2 "Wax," in Georgia and Kentucky.

Most of these names were very probably given to the locations which bear them because of the finding of bees in the vicinity. The honeybee is said to have settled ahead of the white man throughout this country, since the Indians called her "the white man's fly." Over half of the names are located in the Dixie region or Southern States, showing that nature spread the bees more promptly and lavishly in the warm countries.

The evidence that, in most cases, names were given after the things found, unless they were given after the original homes of the settlers, is very apparent in the Indian names of localities, according to the tribes that occupied them. No. Piscataquis, except in Maine; no Mishicott outside of Wisconsin; Petoskey indicates only Michigan; Minnetonka is found nowhere but in Minnesota; no Bayou Goula out of Louisiana; no Snohomish except in Washington; no Tamalpais out of California; no Apalachicola except in Florida.

There are a number of Londons, a number of small Paris, Berlins, Viennas, 33 Washingtons. So both great men and great cities have been patrons of our new cities.

Names of bees and of their products exist but little in other countries as names of places or cities. We find one "Beeton" in Canada (given by the famous D. A. Jones), one "Abejar" in Spain, one "Honeybourne" in England. The long list of names found in the United States evidently indicates the thrift of bees in this country.

Bibliography----Sacbrood

THIS is the title of Bulletin No. 431 of the United States Department of Agriculture, mentioned on page 155 of our May issue. Dr. White is the scientist who has the credit of at last placing the description of the two diseases named foulbrood on a positive scientific basis. He isolated "bacillus larvae" and cultivated it so as to prove that the same disease could be reproduced by its spores. He did similar work on "bacillus pluton." These two diseases are popularly named "American foulbrood" 'and "European foulbrood."

Dr. White now gives us a similar basis in regard to what has been called "pickled brood," under the name selected by him of "sacbrood." He gave this name because in that disease the body wall of the larva which has died of the disease toughens, permitting the easy removal of the remains intact from the cell, as in a sack. Dr. White avers that the name "pickled brood" is incorrect in speaking of this disease.

The brood that dies of sacbrood, with but few exceptions, dies in capped cells, when the larva is stretched in the cell, preceding the change to pupa. It turns slightly yellow, which in a few days changes to brown. If the dead larva is not removed, its surface becomes wrinkled by evaporation and it finally forms a scale. This is never at any time adherent to the cell wall.

In the first stages of the disease, if larvæ are crushed, suspended in syrup and fed to healthy bees, a large amount of the sacbrood is readily produced. But as the larva dries, its capacity for infection lessens, until in the last stages it shows no evidence of being infectious, when fed to bees.

The dried scales of sacbrood in the last stage have often been compared in appearance to the end of a Chinaman's shoe. This description, we believe, was first given by N. E. France, the well-known Wisconsin bee inspector, who called it as others did, "pickled brood."

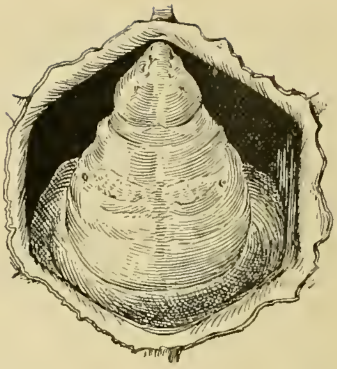


FIG. 1.—End view of Healthy Worker Larva in normal position in cell. Cap torn and turned aside with forceps. Enlarged about 8 diameters. (Original.)

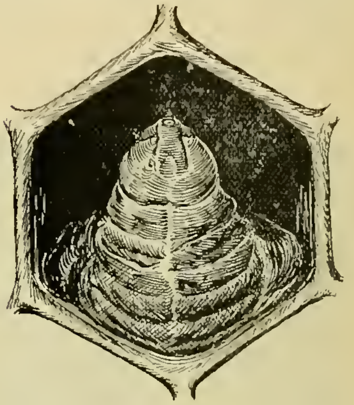


FIG. 2.—Looking into a cell containing larva dead of sacbrood. (Original.)

PURPLE SAGE, EXCELLENT HONEY PLANT OF RESTRICTED RANGE.
(Photograph by Homer Mathewson.)

The point of heat at which sacbrood is neutralized is of importance and interest to beekeepers. Dr. White found the following degrees of heating to destroy the virus of the disease:

When suspended in water, 136 degrees or over.

When suspended in glycerine, 163 degrees or over.

When suspended in honey, 158 degrees or over.

In a drying room, time 22 days, sacbrood also lost its virus.

When kept in honey, it produced no disease after 31 days. So it is safe to say that sacbrood loses its danger after a month.

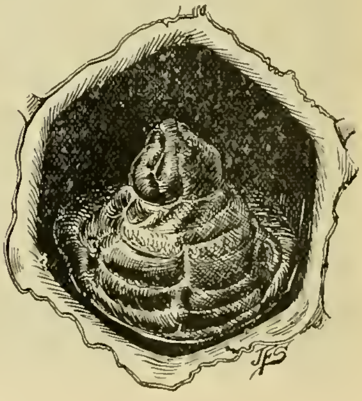


FIG. 3.—Third stage. Dorsal view of anterior third of larva dead of sacbrood. (Original.)

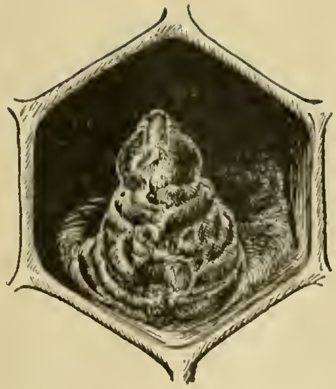


FIG. 4.—Fourth stage. Remains of larva dead of sacbrood. (Original.)

Dr. White also gives its resistance to sunlight, in fermentation in sugar, etc.

The main difference in appearance between sacbrood and European foulbrood is to be found in the earlier death of the larva in the latter disease, for it usually dies while coiled in the cell, before the endwise position is assumed. The saclike appearance is also absent.

Dr. White also takes notice of the well-known fact that sacbrood is more common in the spring months than at any other time. Colonies rarely die of it, but they often become weakened by it. He does not consider the combs of diseased colonies as infectious.

No remedy has yet been given to cure this disease, which usually runs itself out. The advice given by N. E. France is probably the best course to pursue. Strengthen the colony and give it plenty of honey near the brood. If the queen is old, supersede her.

The above named bulletin, which contains 56 pages, is worth perusing, even if some of its scientific terms are "Greek" to the average reader. A valuable amount of information, intelligible to everyone, is stored in it. It deserves a place in every beekeeper's library. It may be secured from the Department of Agriculture in the usual way.

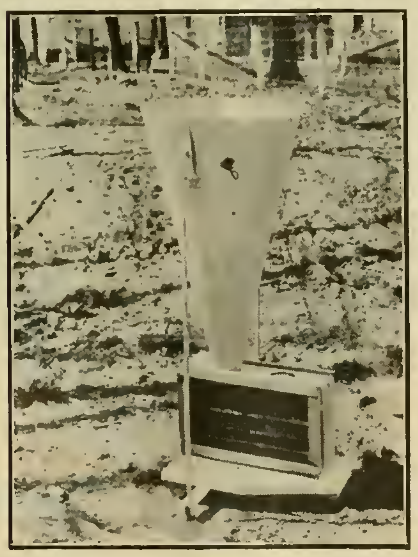
A Convenient Package Filler

MOST of the shippers who deal in combless packages of bees fill them by means of an ordinary tin funnel set directly into the opening of the package. We are showing herewith two pictures of a package filler quite different from those in common use. This filler is used by the Penn Company and is supported by two rods which are pressed into the ground to hold it solid. There is a small platform on which the packages to be filled are placed. The big funnel makes rapid work easy since it catches all the bees that are jarred from a frame held over it and there is no danger of a slight jar overturning the package partly filled with bees.

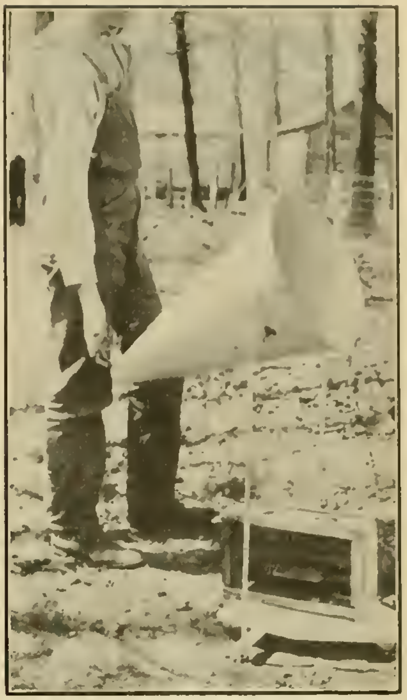
The Wonderful Story of a Queen Bee

By Bro. Romain

TWO years ago, in July, an ex-student of our college asked me for a hive of bees. To please him, I agreed to divide one hive of mine, giving him the queen and three frames of brood. Naturally the "bereaved" bees started queen-cells and in due time a new queen emerged. Every day, about noon, I used to open the hive to watch the progress of her majesty. The fifth day, at 12 o'clock, the queen was found "missing"—out, I thought, on her mating flight; but at 1 o'clock no queen yet; at 2, no queen, either; rather bad—and bees giving signs of unmistakable anxiety. I concluded that the queen had been lost.



PACKAGE FILLER USED BY THE PENN COMPANY.



PENN PACKAGE FILLER SHOWING HOW PACKAGE IS PLACED.

That same day, at 3 o'clock, a friend beekeeper, Mr. G. Rozario, came from his home situated in the center of a populous quarter of Shanghai, about one-third of a mile distant, and told me the strange story that he had just seen a new queen, from somewhere, newly fecundated, gladly received in one of his hives (he had only two). No doubt this was my kidnaped queen.

Mr. Rozario made no difficulty to return the found queen. I went to his house, put the strayed queen in a matchbox and soon re-installed her in her deserted home. I put her on the top of the frames. Then what followed no words can adequately describe. The queen was met with a rush of bees upwards, giving extraordinary demonstrations of joy in touching the queen. They went below, the queen with them, as if simply returning from her normal flight.

Now, can some expert tell, first, why that queen deserted her home; second, how could she be persuaded to enter a foreign hive and be welcomed there, even by the old queen; third, who was guilty of abduction?

Anyhow, is not that fact throwing some light on many cases where beemen are puzzled by the apparition of bees different from those of the hive?

To end the story of that queen I must add that last spring, in March, finding the colony too weak, I united it with a stronger one, without anything between; but the "under bees" got onto the trick and, roused to fury, massacred everyone of the intruders during the night.

Shanghai, China.

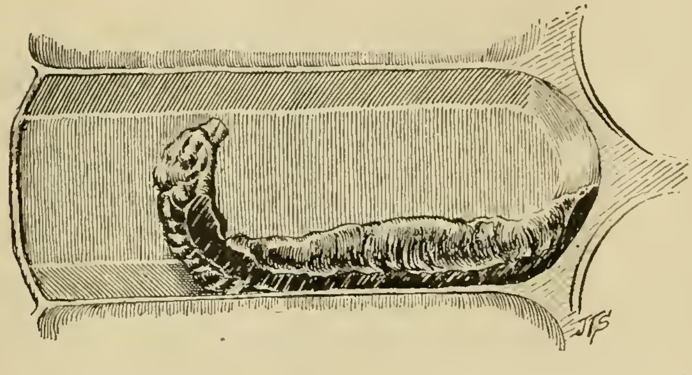


FIG. 5.—Scale, or larval remains in position in cell, cut lengthwise, lateral view. (Original.)

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THE EDITOR'S VIEWPOINT

Honey Prices

Although honey is now selling at higher prices than for several years past, it has not yet reached the high figures of former years. In 1873 Harbison and Clark shipped a carload of honey from California to Chicago. This was probably the first car of honey to be shipped overland from the coast, and it sold for 27 cents per pound, wholesale. This is somewhat above the highest prices for which comb honey has sold in any American market of late.

There are indications that honey will not again drop to the low levels of the recent past. The slump in prices which honey has suffered during the past twenty years is largely the result of the general use of glucose and other cheap substitutes, which have been so widely advertised. The public is turning again to honey at a time when prices rule high and will continue to demand it in preference to inferior substitutes.

A Careful and Thrifty Beekeeper

Success in any line is achieved only by perseverance and activity. But this is especially true of the honey producer. At first sight beekeeping would seem only a summer work. But how many things there are which the thrifty beekeeper can do in the dull season. Here are a few thoughts gleaned from a private letter written last March, which show how our old friend, G. C. Greiner, occupies a part of his spare time before the season opens and after the honey has been disposed of:

"'In the last week or two I have been steadily at work in the honey-house, preparing things for the coming season. My first job was the cleaning up of the extracting supers. Every comb, mainly the sides of the top-bars and the underside of the tenons, is thoroughly scraped and the scrapings made into wax. From two days' scrapings I have made about 10 pounds of fine quality wax. The rabbets of the outsides and their upper and lower edges are also cleaned from all propolis accumulations, so that everything works as readily as new work. All section supers are also looked over, separators, especially, are cleaned up, so that no crowding is necessary to leave room for super springs."

Is it astonishing that as careful a man as this should succeed?

Selling Your Honey

In a period of high prices such as we are now experiencing there is danger that the home market be overlooked and all honey sent in to the big markets to realize quickly at high prices.

Letters have come in from subscribers stating that all their honey went to the big buyers. "My home trade could not possibly pay the price offered abroad."

This is all well and good as long as the price continues to rule high and the demand is good from the larger markets. But we should look a little farther ahead to the time when we may again be offered a lower price for honey, a lower price than we are willing to take.

Then there will be a realization that the home market, sadly neglected, has again accepted some substitute for honey. Again the small producer will vainly endeavor to make his people realize the "food value" of honey and again he will wonder why people will eat such stuff as corn syrups when they can get honey right at their door.

If we care to realize the benefits of recent campaigns with "Eat Honey" stickers, with honey food value booklets, with flashy labels and with other local advertising, we must maintain the campaign even in the face of high prices for our product, and, more than all, we must be in a position to furnish our customers, at least on request, with honey.

Just as sure as we do not, the advertising value of past years' work will be destroyed and the work will have to be done over.

In time of high prices prepare yourself to avoid the lower prices of the future.

Keep your home trade, even though you have to buy honey elsewhere and charge customers an accordingly higher price. They will accept your explanations even though some of them refuse the honey.

Honey Changing the Color of Tea

In one of our exchanges we notice this question, to which its editor is unable to give a satisfactory reply. Neither can we give an explanation if the honey which was guilty of this offense is positively known to be pure. But if the source of the honey is unknown, this would probably prove a base adulteration.

In 1879, when corn syrup, otherwise called commercial glucose, began to appear on a large scale among edible products, we inquired of a chemist as to the easiest means of detecting it. His reply was: "Use it to sweeten tea or coffee and you will find it to turn the liquid to a darker color. Glucose is made by boiling starch with sulphuric acid. The free acid contained in the liquid is afterwards removed by the use of lime. But some free sulphuric acid usually remains in the syrup and it is this which acts upon the tannin of the tea or of the coffee and darkens it."

Of late years, corn syrup is made with more care and contains little if any free sulphuric acid. But it is probable that, in the case cited, the adulteration was of low grade syrup and the acid in it acted upon the tannin contained in the tea, helping to blacken it.

Dark grades of honey would, of course, darken coffee or tea, in the measure of their shade of color. Such mechanical action could be readily expected.

The fact that some grades of commercial glucose still contain some free sulphuric acid and quite a little sulphate of lime in suspense ought to lessen the tendency of our housekeepers to use such preparations, especially if they can secure pure honey from the apiary.

Obituary

O. O. POPPLETON

Colonel Oscar Ogden Poppleton's death occurred at the National Soldiers' Sanitarium in Hot Springs, South Dakota, on October 4, 1917.

Colonel Poppleton was in failing health when he left Florida last spring, but hoped that he would recover while with his daughter in New Hampton, Iowa. Finding no improvement, he went to the Soldiers' Sanitarium in hopes that the rest would cure him. Still finding no relief, he telegraphed his son-in-law to come for him that he might pass his last days with his daughter, but the end came before he could undertake the trip.

O. O. Poppleton was born in Green Springs, Ohio, June 28, 1843. At the age of thirteen he removed to Iowa, and when eighteen entered the civil war as a private. He soon rose to first lieutenant and served during the entire war as an officer. After the war he was placed for two years by the government in charge of establishing - National Cemeteries throughout the country.

In 1886 he removed from Iowa to Florida and engaged in beekeeping there, being first located at Hawk's Park and later at Stuart, Florida.

It was in 1869 that Mr. Poppleton first heard of a bee paper and thus learned that there was a better way to keep bees than in box hives. He began at once to transfer and became an up-to-date beekeeper.

In 1875 he realized the advantages of chaff as packing for northern latitudes and from then on packed all colonies thus, to avoid winter losses, until his removal south.

About 1890 he had charge for two years of the large Dussacq apiary in Cuba, containing from 350 to 500 colonies. During one year the apiary of 398 colonies yielded him 52,000 pounds, or about 130 pounds to the colony. This was his largest crop, though his average per colony has many times exceeded this.

For four years Mr Poppleton practiced migratory beekeeping, moving from one location in Florida to another about 150 miles away, so as to take advantage of the different flora. His moves were made with a launch. He was successful, his per colony averages for the four years being respectively 273, 291, 82 and 300 pounds.

In later years he was obliged to give up extensive beekeeping on account of ill health.

Colonel Poppleton was a deep-thinking beekeeper. He studied out his problems and laid his plans accordingly. He was America's foremost advocate of the long idea hives about which so much has been written in the bee journals in past years, and his uniform success shows that this type of hive was admirably suited to his methods.

The late O. O. POPPLETON,
From a Photograph taken in 1901.

In his different locations Mr. Poppleton was often bothered with bee paralysis among his apiaries. It was he who first advised the use of powdered sulphur in checking the depopulation of colonies from this disease. He was also the inventor of the American sun wax extractor.

Mr. Poppleton was married twice, both of his wives preceding him in death. He is survived by two daughters, Mrs. Pearl Babcock, of New Hampton, Ia., and Mrs. G. A. Hatch, of Shelton, Wash.; and a half-brother, F. W. George, of Aberdeen, S. D.

The older beekeepers will regret the death of this pioneer, whose writings appeared so often and were so instructive in the journals of the earlier days of movable-frame beekeeping.

Mr. Poppleton's experiences of migratory beekeeping are very interesting to read and show the careful preparations which he made to insure success.

As one of the old school, of the old army, he will be missed; but the record of his achievements lives after him as an example to future generations.

Beekeeping for the Crippled Soldiers

A soldier's home for the maimed and crippled soldiers of the present war has been established by the Italian Government at Palermo, Sicily. Among other useful occupations for these men an apiary has been established, a partial photograph of which is given in the October number of L'Apicoltore

Why could not small apiaries be established in some of our Soldiers' Homes? The occupation is not strenuous, and some profit may be derived from it, besides the supplying of such an establishment with the honey that may be required for the use of its inmates.

Kansas Meeting

The 14th annual meeting of the Kansas State Beekeepers' Association will be held in the Chamber of Commerce, Topeka, January 7 and 8, 1918.

A splendid program is being prepared and all persons interested in bee culture are urged to attend.

A honey banquet will be served at noon, January 8.

O. A. KEENE,
Sec'y.

Death of L. E. Mercer.—We are sorry to report the death of one of the largest of California's beekeepers, L. E. Mercer, which occurred at Ventura on October 21, 1917. Mr. Mercer had for many years been one of California's most prominent beekeepers.

Brood Foundation----Most Ecnomical Weight to Use

By the Editor.

A READER of the American Bee Journal asks what is the most economical weight of foundation to use for brood-combs.

It was at one time thought good economy to use only very narrow strips in the frames, just enough to insure the building of straight combs. Numerous tests, both scientific and practical, have proven that beeswax costs the bees so much in honey that it is advisable to save as much as possible in this line and use, not only full sheets of foundation in the brood-frames, but a weight of foundation that will, as nearly as practicable, enable the bees to build the full depth of the cells out of it. Although the bees are sometimes so hurried by the honey crop that they fail to make use of all the available wax in the foundation, they usually do lengthen the cells to a great extent out of the foundation. This is readily seen if we take up and examine a comb which is being built out of foundation.

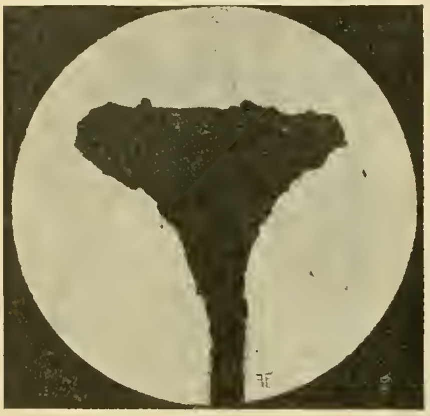


FIG. 1.—The lump at the outer edge of the cell, first stage—longitudinal section enlarged 35 diameters.

However, in order to ascertain how much wax is required in the foundation to secure the entire depth of the comb from this wax, it was necessary to make careful experiments. The Foloppe brothers, of Champosoult, France, undertook it several years ago. These experiments were published in the May, 1911, number of the American Bee Journal. We will supply the answer to the question made above by quoting the most interesting parts of these experiments.

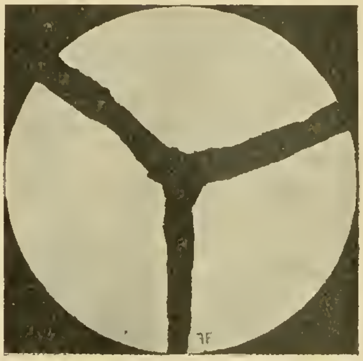


FIG. 4.—Intersection of three cells—section through the thin part of the line A-B in Fig. 2.

In order to obtain a positive result, Messrs, Foloppe relied on two points, the color of the comb secured and its weight.

The first requirement was a coloring pigment which would stain the foundation permanently, but would not give any odor or flavor objectionable to the bees. It needed, also, to be of a consistency that would not permit it to "run" or soak from the foundation to the new comb produced by the bees. After securing this pigment, sheets of different weights were made of stained wax and given to the bees. The result was that the foundation approximating about 5½ Langstroth sheets to the pound proved the most economical, as it furnished wax enough for the entire comb. Heavier sheets supplied enough for the cappings. Lighter sheets required some new wax of their own production.

Weighing the frames and foundation before the experiment and also afterwards confirmed this, for with the six-sheet foundation, less than one per cent was added to the weight of each frame during the process of stretching the sheets into full combs.

There was, however, a particularity about this test which suggests to us the possibility of securing the same result from a slightly lighter grade of foundation. The sheets used in the test were made on the European foundation press. This instrument makes much less perfect sheets than our American mills. It leaves more beeswax in the base of the foundation. It must be, therefore, more difficult for the bees to draw out the cells. For that reason we believe that a weight of about 6½ to 7 Langstroth sheets to the pound would still secure a good result and permit of all or nearly all the comb being made out of the sheet.

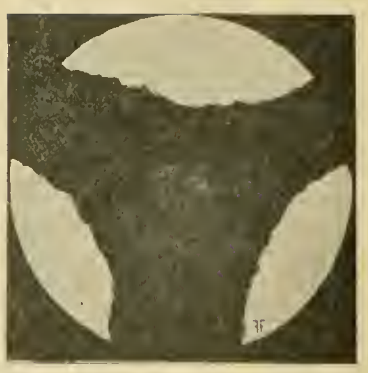


FIG. 5.—Intersection of three cells—section through the middle of the lump on the line C-D in Fig. 2.

A very interesting remark made by these careful experimenters was the discovery that, in drawing the foundation the bees do not pull it outward perpendicularly to the depth of the cell, but that on the contrary they do their work in a circular way, manipulating the wax after the method of the potter, who shapes his vase on a turning table. This gives much greater solidity to the work than a straight pull would give. The direction of the bees' work in stretching the cells may be readily noticed in the highly magnified portion of cell-wall shown in figure 6, the arrow imbedded in this cell-wall indicating the direction of the cell's depth. The ridges, which show plainly, display the work of the bees and its direction. As they thin out the cell base or sides, they keep pushing before them a part of the plastic wax and carry it out in a ridge or lump which

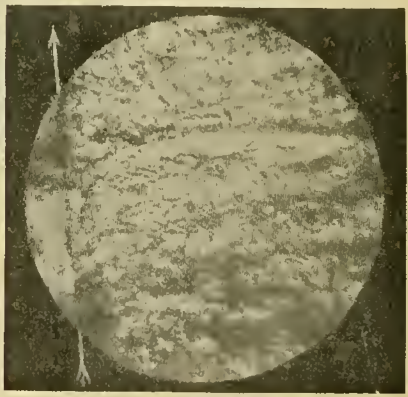


FIG. 6.—Part of wall of a cell showing the lines left by the work of the bees. Those lines are at right angles with the cell-wall indicated by the arrow—enlarged 45 diameters.

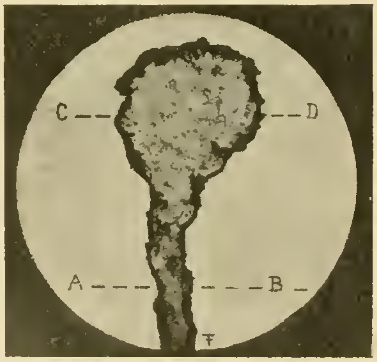


FIG. 2.—Lump on the edge of the cell—second stage—longitudinal section enlarged 35 diameters.

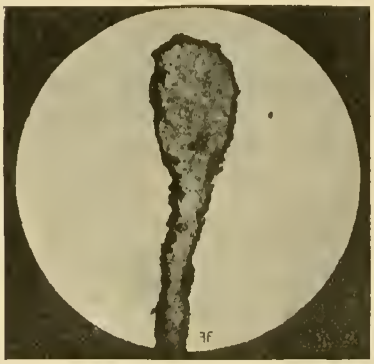


FIG. 3.—Third stage.

keeps getting smaller until the entire amount of wax is used up. A small ridge, or cell edge, however, is always retained, as is well known to those who are in the habit of handling combs. This ridge strengthens the combs, the thinness of whose walls would render them liable to be readily broken by the bees traveling over them.

Those who consider the initial cost of foundation as partly an obstacle to its use in a profitable way should bear in mind that the investment in this material is a permanent investment, if only they will see to it that it is not destroyed by moths or mice. If you use 2 or 3 pounds of foundation in each hive, it is there to stay, and when the combs which are built of it become too thick or too dirty to use, the beeswax in it is still there, with probably some addition by the bees, and about two-thirds of the initial cost may be saved for future combs.

A Use for Old Tin Cans

By A. F. Bonney.

IN the United States millions of tin cans of from four ounces to a quart capacity are utterly lost annually, and while this waste cannot be avoided, I conceived the idea that I could save what I emptied in the kitchen.

I have to make several cement hive stands this spring, and as I have neither boulders nor broken rock to save cement, I decided to work as follows: Make a mould the size of the stand, and an inch deeper than the largest can I have to use. The frame is put in place, and an inch of cement, mixed three to one, poured in. Let this set a little, then push into it the empty cans, open end down. When the cement in the frame is stiff enough so that the cans will stay down, fill the mould with cement and leave it to set.

A quart tin can is about four inches in diameter and five inches high. Twelve of them set an inch apart and allowing an inch on each side and each end will measure five inches deep, sixteen (16) inches wide and twenty-one (21) inches long. They have a cubic capacity of about 690 inches. The frame, which is 16x21x6 inches inside, contains 2016 cubic inches, so almost 33 per cent of the cement is saved, and there will be no loss of strength, while the stand will not be quite so cold as though made of solid cement, owing to the 690 cubic inches of air confined in the cans.

Buck Grove, Ia.

Charter Oak Fair

By J. E. Crane

CHARTER OAK fair held at Hartford, Conn., is of more than ordinary interest to beekeepers. In addition to a fine hall 40x80 feet, near the entrance to the grounds, they have a premium list of some $500, as well as concessions for selling honey, wax, honey sandwiches, etc., making it worth while for beekeepers to put time and expense into their efforts to get up an attractive display.

THE FOLOPPE BROTHERS

In addition to a large display of comb and extracted honey there were over forty single-comb glass hives of various races of bees, as well as queens caged ready to mail; fine displays of wax, beekeepers' supplies, canned fruit, vegetables and cooked food.

While the quality of honey was not all perhaps equal to some former years, owing to an unusual amount of honeydew in many parts of New England, yet the improvement in the exhibits over six or eight years ago was very noticeable.

The exhibits of beeswax were very fine. Many of them were so nearly even in quality that the judge was not a little embarrassed in deciding who should receive the highest prizes.

Connecticut was formerly thought to be a rather poor section for beekeeping and that not many years ago, but one is surprised to learn of the yields of honey that enterprising beekeepers are now securing, who are giving almost their entire attention to the business. The Connecticut State Beekeepers' Association has doubtless done much in developing this industry in the State.

One of the interesting things about this fair was that it was held open, not only during the day, but well into the night. Located near a large city, a multitude of people could come at night who had no time for it during the day. There was a larger attendance on some nights than during the day.

Another unique feature of the fair was the concessions for the sale of honey, wax and other things connected with this industry. How natural if one sees a nice display of honey to want to buy a section or a bottle to take home with other things from the fair! Partly filled sections are sometimes cut across from corner to corner into four pieces, each side having a triangular piece of comb attached to it, to be eaten clear. How much better to sell honey to a crowd in the form of a sandwich. A small wheaten roll weighing two or three ounces is cut open and a thin slice of honey one-fourth or three-eighths of an inch thick is placed between and the two halves of the roll closed, making a delicious morsel for a lunch. Honey fizz made from a preparation of honey and soda water had a large sale and is a most healthful, palatable and nutritious drink. So great was the demand for these refreshments on the first day of the fair, when there was an immense crowd, that over 1,800 five-cent tickets were sold, each ticket entitling the owner to a glass of honey fizz or a honey sandwich.

I understand that the sale of honey at the Eastern States Dairy Show at Springfield, Massachusetts, last year was very satisfactory. The demand for honey appears to be on the increase when brought to the attention of people. No less than four different parties were selling honey. One of these was selling ounce cakes of wax, as well as honey, for five cents a cake. He had sold out before the close of the fair. The price for which honey was selling was 20, 25 and 30 cents for half pound, three-quarter pound and one pound bottles. Sections sold for 30 cents, although less than pound weight.

Speaking of the sale of honey reminds me of an anecdote some one was telling me while at the fair. He said that while attending a beekeepers' meeting one man said it was not fair for those who sold supplies to deal in honey. He had bought supplies of a certain firm and when he came to offer his honey at a grocery store he found the firm that sold him his supplies had supplied the store with honey and he did not know what to do with the product of his half dozen hives. The party telling me this said he did not propose to lose the sale of his honey by honey from outside the State, and went to work and sold his entire crop of several tons without difficulty. In fact, he found the local producer has the advantage of those dealing in honey who live at at distance.

The sectional hive seems to be gaining favor among the more enterprising beekeepers of Connecticut, especially where there is much disease. One man told the writer that European foulbrood would not go through a queen-excluding honeyboard; so if a hive was found diseased you had only to raise the diseased combs above the queen-excluder and give the queen new foundation below, and they would clean up It seemed too good to be true. Another told of buying a lot of bees very cheap. They were so badly diseased. He raised the infected combs above a new super and both above a queen-excluding honeyboard, placing the queen on foundation below the excluder, and, although the colonies were badly infected, they had nearly or quite overcome the disease and given a good crop of surplus honey. It looks as though there might be something in it. I noticed, while at the fair, the tendency of producers to get together in other pursuits than beekeeping. The peach growers have a New England Peach Growers' Association; the market gardeners, the Hartford Market Gardeners' Association. And the tobacco growers of the Connecticut valley, and even the onion growers, are organized for buying their fertilizers and selling their products.

I almost forgot to speak of the daily demonstrations of handling bees. A small space, perhaps five feet square, enclosed with wire screen with a hive of bees, at one side of the exhibit, was utilized for this purpose, and the hive opened and the various ways of handling of bees explained. Few exhibits at a fair will attract a crowd quicker than such a demonstration, or are of greater educational value. Many persons will see the queen bee for the first time and learn interesting things about bees and beekeeping of which, without such a demonstration they would have remained forever ignorant.

TOLLON BERRIES, A FIVE-CENT BUNCH. (Photograph by Alice Coldwell).
Tollon, or Toyon, *Heteromeles arbutifolia*, the California holly. It is indigenous to the Pacific coast. It has white flowers and bright red berries.

My Neighbor's Garden

By C. D. Stuart.

JERRY, my neighbor, bent under the weight of Tollon berries, paused to greet me. A word to the dog tugging at the chain in his hand, and he lowered the burden on to the stack by his cabin door.

"Gettin ready fer market," he volunteered.

"Which one?" I asked, with vague recollections of fish odors.

"Street flower stands," he explained. "Couldn't celebrate Christmas in San Francisco with California holly, even if those dagoes do mix it with prickly oak to fool people into thinkin' it's eastern holly."

"Frisco'll celebrate without yours unless you head off the motor fiends that infest this country," I retorted, remembering my errand to warn him against their depredations on his Tollon hedge.

I couldn't help seeing them. They always honked aggressively at the

FLOWER SELLERS ON THE PUBLIC STREET IN SAN FRANCISCO. HERE FLOWERS CAN BE PROCURED ANY TIME.

bend of the road just above my apiary, where they would stop at sight of those giant clusters of cardinal berries aloft on shrubbery almost as impenetrable as a tropical jungle. In a few moments they would slip quietly back down the grade, guilty tonneaus aflame with spoils. "After all," I ended, cheerfully, "why waste good gasoline climbing hills when more and better berries within a half mile of the town as the bee flies, can be had for the stealing?"

But my neighbor ignored the thrust. He fastened the dog, made room for me on a rough bench and continued to sort the branches into bundles of sizes intended to entice the coin of every denomination from the pocket of the public—small, short-stemmed, five-cent bunches; small, longer-stemmed bunches for a dime; two, four and six-bit sizes; and the gorgeous armfuls. A tolerant smile played on his weather-beaten face.

"A machine allus makes a feller act like he owns the earth." A wave of his free arm dismissed the subject. And even though I knew positively that from the time the advance guard of the summer visitor, on the pretext of inspecting furnished bungalows, boldly approached his front door, to midwinter, when the small-boy pest on a still hunt for a Christmas tree, sneaks an axe from my woodpile, selects an unfrequented spot and wriggles through the hedge, each month ushers in its own peculiar type of human trespasser—plus my bees whenever the flying is good —I could say no more. Indeed it was only the incident of my axe that had first prompted me to speak. I wanted to square myself with my neighbor, as it were.

But more than that, I wanted to **know** him. I wanted to know why any man would deliberately choose a rough-brush-covered piece of land for a home, and what he was growing on the other side of the hedge that walled it in. So did everybody else. Many pointed a significant forefinger to the forehead when his name was mentioned; also it was rumored that he was a writer, a Mormon, a linguist commanding seven different languages, a reformed hobo, a——, But why enumerate further when gossip agreed only on the one point, that he was a "harmless gink?"

My bees alone came and went regardless of the law and local prophets, secure in their ancient right of honey toll, for the lawyers who had passed my neighbor's title had, through some strange oversight, neglected to require quit claim deeds from those tiny claimants. And each season my hives are filled with fragrant amber honey, subtly reminiscent of the large clusters of spicy white flowers that bloom in July, and often earlier, according to locality; the Tollon being common to nearly all sections of California.

For three blessed years I had watched that hedge grow. And now at last I was on the other side and being invited by my neighbor to partake of a curious wine-red drink which he had made from his Tollon berries after an old Spanish-Californian recipe.

"The Indians ate the berries," he informed me; "they used 'em as a sort of relish, or salad."

So we ate them, too. They were acid and slightly astringent, though not exactly unpleasant. And the quantity! There were berries enough to decorate every Christmas tree in the world. and only that hedge of the same to protect it from the world. For my neighbor had cunningly decided against board and picket fencing. Neither did he select the latest thing in barbed wire, naively suggested by the local hardware dealer. "Reg'lar fencin' would be shoutin' fer scrubs to come an' break it down." And few suspect the luxuriant rows of Tollons that completely cover my neighbor's half-acre—a rich and glowing tribute to his ministrations with hoe and hose. For under cultivation and adequate pollination he asserts the yield of his trees has increased a hundred fold.

JERRY PREPARING FOR THE HOLIDAYS.

So my bees had done their bit for Christmas Jerry.

I arose to go. My neighbor arose also.

"You see, folks can't do much harm except to the hedge," he concluded, graciously referring to my well-meant tip. "They can't get a look inside, can they, good old Jane dog?" He stooped to stroke a lank but graceful canine.

It may have been the wine-red drink, or it may have been the holiday atmosphere; I do not know. But I reached over and poked my neighbor familiarly in the ribs. "Come off! What about the summer visitors that make friends with your dog, take possession of your garden, and the gardener, too, and go away with enough foliage to stock a greenhouse? May be that don't affect your crop!"

"Say," he whispered, how'd you know?"

"They raid my place first," I whispered back.

He looked puzzled.

"My beehives," I ejaculated. They all appear to think they are some new-fangled bungalow. Can't warn 'em off! Finally one day some of 'em got curious about the furnishin's an' peeked in."

My neighbor thrust out a horny hand. "Shake!" he roared.

Los Gatos, Calif.

The Paradise of Bees

By Bro. Romain

FOR the interest of beekkeepers, I relate here the conversation I had the other day with Mr. A. Evans, of the Inshallah Dairy Farm, an ex-officer of the Indian army. We were talking of bees, when he remarked, "China is a very poor country compared with India, which may be truly called 'the Paradise of Bees,' on account of the perpetual summer and the abundance of flowers. When I was there in 1875, in one of my rambles through the jungle near Kamptee (Central Province), I came across the most astounding sight that any beekeeper has ever dreamed of in his life. In the branches of a gigantic multi-trunk banyan tree, so common in India, there was an enormous nest of bees; it looked like an old crenated castle, alive with the buzz and the movement of countless bees. Imagine a mass of combs 18 feet by 12 through, peopled by several hundred colonies forming a single block, storing and multiplying year after year, swarming from one side to the other.

"I tried to approach the fortress, in spite of the natives telling me I would be killed—(besides, they added, the honey was not good in the hot season)—but on nearing the combs I had to beat a hasty retreat, assailed by thousands of infuriated bees of the fiercest kind—the tiger bee. In proper time the natives used to get honey by means of long bamboo poles with which they were poking the monster nest to secure a good flow of honey. What a pity I had no kodak with me; such a photo would have been a real treat for beemen."

Last year the Gleanings spoke of a certain bee-rock in California, but how far that rock is outmatched by this wonderful bee banyan tree of India, which constitutes, I think, the record of beedom.

Shanghai, China.

(This seems too wonderful to be true, but the responsibility is with the narrator, Mr. Evans.—Editor.)

A Honey-House

By the Editor

CAN you give the plan and description of a small and serviceable honey-house, inexpensive and easy to build?—A Reader.

Very few honey-houses are built, except by specialists in honey production. Usually some part of an outbuilding is used for this purpose. Many people, after the honey has been removed from the hives, keep it in an attic or in some unoccupied room or in a warm and dry cellar. Specialists who wish to make the handling of honey easy build their honey-house in two stories, in a hillside, so that both stories may be entered on the level like a basement barn. In the upper story the extracting is carried on and the honey tank or honey receptacles, whatever they are, are located below. So the honey can run by gravity from the extractor directly into the tank which is to receive it.

A few indispensable requirements should be observed in putting up a honey-house. For a small apiary, a very small building will do. But it should be bee-proof and mouse-proof. If the bees can come in through the joints of the siding or under the shingles of the roof, an experience that the writer had repeatedly in his young days, there is neither peace nor comfort in handling or extracting honey. Besides, not only will the bees make visits at unexpected and undesirable hours, but wasps, flies and beemoths will also enter the building and spoil everything in reach.

Mice coming through cracks in the floor, or about the corners of the wall, are also an unmitigated nuisance. They will soon gnaw holes in the section cases or in cases of extracting frames and do more damage in one night than moths could do in a whole month of summer.(If you happen to leave an open pail or a jar to catch the drip of the extractor or of some leaky super of sections, you may find in it an embalmed mouse. So we strongly urge our friend, if he builds a honey-house to make it, at least the lower floor of it, of solid concrete, and to use well-jointed boards in making both the floor and the walls.

It is not necessary to build a honey-house frost proof. Unless you wish to keep your honey from granulating, in which case it will be best to keep it in a regularly heated room, you will find it advantageous to keep your honey-house, or that part of it in which the empty combs are piled over winter, as cold as any outbuilding can be kept during the winter months. This, in our so-called temperate climate, north of the 35th degree and west of the Rocky Mountains, will insure perfect immunity from moths for all your empty combs in spring.

A very good way, if you wish to be able to work in your honey-house during the winter, to get things ready for spring, is to have one room in it plastered and finished like a room in your home. A small stove will help keep it warm.

Screens are indispensable on a honey-house. In January, 1916, we gave a photograph of the entrance to the lower story of our own honey-house, with an entry screened on both sides of the door. This entry enables the apiarist to go in and out without fearing the intrusion of robber-bees, who will spend their eagerness in trying to enter at the screen next to the wall. Similarly, the window screens are arranged to turn the bees out without permitting them to return, by simply extending them a foot or so above each window with a space of a quarter inch between them and the wall. They are cleated on both sides with strips of lath under and over the edge of the wire screen. The bees, always ascending when they reach the screen to escape, easily find their way out, but when they return they do not have enough powers of reasoning to seek admission at the top edge of the screen. They seek it at the spot where the odor of the honey attracts them. Not only does this release all bees, but, if the window is left open all summer, the flies even will be kept out of the honey-house, and this is quite a convenience. Needless to say that every window in a honey-house should be similarly provided with screen escape.

If you have a house in use already and it is not quite bee-tight, you can help matters very much by using, on the inside of the wall, sheets of tarred building paper. The odor of the tar is not liked by the bees, and they are usually baffled and disconcerted by this odor, which is so unlike that of their combs.

An ideal honey-house could be built, in countries where they winter bees in the cellar, by making two stories in a hillside, the rear part of the lower story to be used as a winter repository for the bees, the front to be used as a work room. It would be necessary to have a heavy non-conducting wall between these two rooms, so that the bees during their winter sleep would not be disturbed by changes of temperature.

Our columns are open to useful suggestions on this question.

Small Apiary Management

By O. H. L. Wernicke

NINETEEN SEVENTEEN was not a very good honey year in this section. A cold, backward spring and much rain during white clover honey flow resulted generally in excessive swarming and meager surplus stores.

As always, there were variations in the results under apparently similar conditions, some colonies producing well while others did little or nothing. The same rule holds between apiaries.

My own little apiary did very well, indeed, yielding an average per colony in excess of 150 pounds, two-thirds extracted, one-third section honey. My 1916 average was better than 200 pounds per colony, spring count. Increase by primary swarm, 1916, 30 per cent; 1917, none. Winter and spring losses, 1916, none; 1917, none. As you will correctly infer, these results are unusual and far above the average for this region. It is also to be remembered that small apiaries often make a better average showing than do larger ones.

Nevertheless, here in Grand Rapids are many small beekeepers who obtained big honey yields in 1916, but very little this year, and the larger apiaries in the surrounding country were generally disappointed over the results for 1917. Excessive swarming seems to be a general complaint from this territory this year.

There has been more than the usual necessity for spring feeding and reports of dwindling. I am not a believer in much feeding, either in the fall or spring. I can see no advantage in leaving scant stores, and then feeding syrup. The extra labor, the risks and difference in quality of food all seem to favor the plan of leaving more than ample stores. Some very good beekeepers say 25 pounds, others 30 pounds, and occasionally one believes 35 pounds is about the correct amount of winter food stores to leave a colony. Viewing this matter of winter stores broadly, it makes little difference whether we leave 25 pounds or 50 pounds, provided the amount is ample. Unconsumed stores are not lost. The excess from one season is invariably represented by a like gain of surplus honey the next. You can only lose it once, i. e., in the first season, and when this one season's excess is spread over many years and credit is given for reduced losses, reduced dwindling, earlier brood-rearing and stronger colonies, the balance, I am convinced, will most frequently be found on the side of leaving excess stores.

I like the house-apiary plan; that is, if you have a house with ample light, ventilation and working conveniences. It is a pleasure for me to work with bees indoors. It is far more comfortable than working out of doors and it saves both time and temper during unfavorable weather.

Except when there is no honey-flow, the bees from hives in process of manipulation go at once to the light and out of the house. That is an advantage. The same rule holds, but to a lesser degree, during periods on no honey-flow. Altogether it is less troublesome and requires less costly equipment and less work than the out-of-doors plan.

My beeware equipment is completely standardized and consists of unpainted side-wall, eight-frame Langstroth hive-bodies, no-beeway 4¼x4¼ sections, No. 2 supers, honey-boards or plain flat covers, and reversible bottom-boards. I use none but wired Hoffman frames with full, foundation.

Each colony is permanently housed in two full eight-frame hive-bodies; the two-story, sixteen-frame home thus provides ample brood space for the most ambitious queens under all circumstances, with plenty of room for stores. I regard this as a matter of importance during the early spring, when it is desirable to create an abundance of young bees for the approaching flow. I do not use queen excluders, and I am never troubled with brood in the supers.

About this time of year I look through all my colonies to see that each has abundant stores, and is otherwise normal, and, at my earliest convenience, prepare them for winter.

The packing for winter is for me a simple operation, quickly done in any kind of weather. The operation consists first of placing an empty super under each hive, between the bottom-board and lower hive-body. I leave all the section-holders and fences in the super. This provides ample circulation of air, space for dead bees, cappings and so forth, and may be used as a feeder. I leave a full five-eighths inch opening to insure an abundance of air and circulation, as practically no dead bees or cappings fall on the bottom-board, but are caught between the fences, on the section-holders of the super, hence no obstructions can occur to the free circulation of air under the entire hive surface.

The under super also serves as a sort of windbreak and allows the bees to cluster if they so wish; the vertical fences serve as ladders for the bees to come and go when weather conditions permit.

Having placed my colonies on these sectionless supers, I proceed to tie on winter overcoats, consisting of slabs made from five layers of corrugated strawboard, pasted together with silicate of soda and the edges bound with paper tape. The slabs of strawboard are about an inch thick and are accurately cut to fit the sides and ends of the hive all around, and extending from the floor to three inches above the top edge of the two-story hive. Three strong cords, center, top and bottom, hold these slabs in place. I tie a loop in one end of the cord, which makes it easy to draw it taut and hold it in place, by simply tucking the loose end under. There are then no knots to untie and tie, and the packing can be taken off and replaced in one minute.

For top packing, I sometimes use a honey-board next to the hive, and above that a burlap chaff bag, well stuffed and pressed down tight all around between the upward-projecting sides of the corrugated slabs. Last winter I used some corrugated strawboard slabs on top in place of the chaff bags. These slabs consist of ten or twelve layers of strawboard and are 2½ inches thick. The layers are held together by silicate of soda applied to the surface of each layer for about three-fourths of an inch all around the edges. I prefer not to cover the entire surface of the layers of these top slabs with silicate, because it is more or less impervious to moisture and would reduce the absorbing qualities of the cover.

With these top slabs I do not use the honey-board under them. I cut up some old carpet to fit the hives, which I place next to the frames, and then press the top slabs down on the carpet.

This done, I reduce the 3x14 inch opening through the wall of the house, over the alighting-board, to 1x6 inches. This helps to keep out the cold and wind. This opening is about 8 inches away from and 1½ inches below the ⅝x12 inch opening of the hive, permitting flight whenever the weather is suitable. When all is snug for winter I close and darken all doors and windows, of course. This keeps the bees out of the house.

I am now through with my bees until spring. I remove the under super and clean the bottoms about time pollen is coming in, and at this time the outer openings through the house wall may be enlarged.

About the time that the fruit bloom comes I enlarge my hives by adding a third full eight-frame super, and sometimes two of them. This seems to inspire the colony with a spirit of hustle—"a big task ahead, girls," spirit, as it were. I never cut out queen-cells. The bees do that when they find so much room they cannot spare a swarm, but this extra room must be given early, the earlier the better. Brood rearing now goes on at a maximum rate, and in case of a poor queen, she will generally be promptly superseded. The colony seems to realize the magnitude of the task ahead with so much available space.

When I find that the bees have begun to store honey in the third story of the hive, I lift it off, and replace it with another, in which the bees are working, on top of the others. With work in process in the topmost super, no other coaxer is needed.

As warm weather prevails and the colony becomes more prolific in young bees, I give them top and middle ventilation by using a honey-board for cover with bee-escape hole open. I also shift the third hive-body or super above the second story, 1¼ inches forward, thus creating an opening front and back, which the bees will guard and regulate to suit. This combination of ventilation and big working space given early, I believe to be as near a swarm preventive as it is possible to have. I have had no swarming this season.

Grand Rapids, Mich.

(This management of bees is as simple and as "snug" as the famous "Wernicke book cases." If you know of a better method for a small apiary, reader, let us hear from you.—Editor.)

A HOLLOW LOG APIARY IN THE MOUNTAINS OF WEST VIRGINIA.

Beekeeping as I Observe it in West Virginia

By Chas. A. Reese.

THROUGH neglect and lack of modern equipment beekeeping in sections of West Virginia has been on the decline during the past decade, while in other localities a great deal of interest has been taken toward advancement of the industry. Without doubt the extremely varied situation may be attributed largely to topographical conditions, which to a certain extent have affected the extension of railroads in some counties. The existence of conditions of like nature necessarily means long overland hauls, from twenty to sixty miles in some instances. Some roads in the winter and spring seasons are entirely impassable to wagon traffic. It is during that season of the year that all hives and supers should be obtained and placed in readiness for emergencies which are sure to occur in beekeeping.

In certain localities bees are kept, not as a source of income, but as a provision, for production of sweets for home consumption. So little or no capital has been invested in equipment. Naturally being able to secure equipment only under the existing difficulties, the next best thing is done, and that is to use the materials at hand. The substitution for a hive is generally a hollow log, barrel, keg,

PART OF ADAM J. YAHN'S APIARY.

box or occasionally a modern hive without frames or foundation. Hives of hollow logs are locally known as bee gums, because of the general use of a section of a sour gum tree. Such apiaries are very common. A combination of all is frequent. Bees kept under such conditions are allowed to swarm without attempt to control them, and in most cases swarming is encouraged. The number of swarms cast by one colony is looked upon as an indication of strength. Every year large numbers of bees are allowed to seek refuge in the timber. Years of such practice have made bee trees quite common in the virgin forests of the State.

Many people depend entirely upon honey taken from bee trees and they are usually amply repaid for the time and energy expended in search for these trees. Reports of two or three hundred pounds of honey obtained from a tree are very common. Argument is often advanced that it is easier to obtain honey from the forest than by keeping a number of stands. It is likely true in such instances because the bees are kept under conditions which are adverse to honey production.

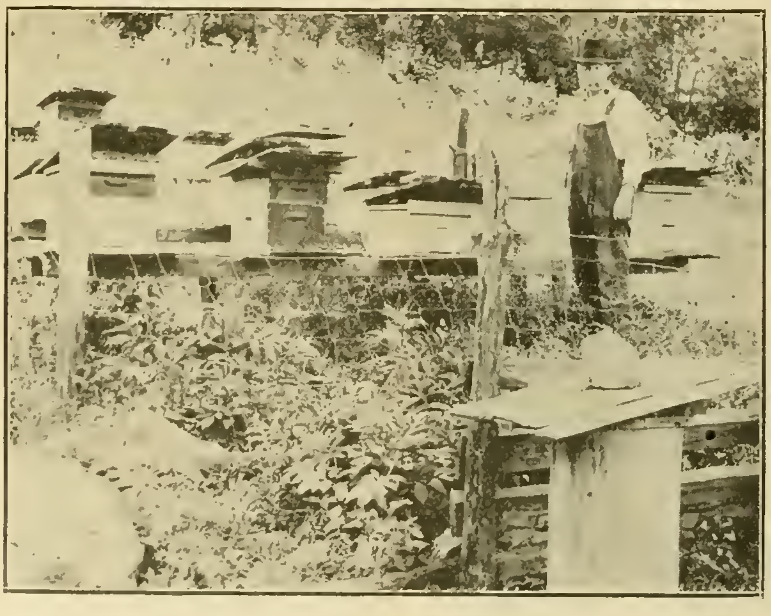
Wild bees are the nucleus of more than one apiary. Among those who have begun extensive beekeeping from this source is Grant Luzader, of Pennsboro, West Virginia. Mr. Luzader, a jeweler by trade and naturalist by choice, spends his hours of recreation in hunting bee trees. Unlike most bee hunters, who take only the honey and leave the bees to their fate, he has practiced conservation and places all bees in modern hives. He now has 115 colonies scattered in several outyards. Being a firm believer in the necessity of protection for summer as well as for winter, he uses a type of double-walled hive of his own construction which is modern in every respect. Through continued use of full sheets of foundation and selection of brood-combs, drones have been reduced to a minimum. Having a source of nectar from a varied flora, as fruit bloom, locust, willow, white clover, poplar, sumac, asters and autumn flowers, the bees never fail to produce a paying crop of comb and extracted honey. Occasionally a box-hive beekeeper adopts modern methods and enters the class of progressives. Levi Gregory, of Webster Springs, West Virginia, after reading considerable literature on the possibilities of apiculture decided that the day of the hollow log beekeeping had passed. Several modern ten-frame hives with complete equipment were purchased and immediately filled with bees. Some of his mountain neighbors declared he was a fair specimen for the asylum, while others watched his experiment with great interest. It required only one year to convince his critics. A complete change of beekeeping has taken place in his locality. This past year he tried another experiment in the way of buying pound packages in making increase in his apiary. The returns from these bees were the best of any in his apiary.

His apiary is located five miles east of Webster Springs, on the side of a mountain. Here the bees have access to the willows and soft maples in the valley, and locust, poplar and basswood on the mountain. Besides, there are wild flowers and shrubs. Because of the trees growing on the slopes of the mountains at different elevations their blooming period usually covers a period of two to six weeks.

That section of West Virginia which lies between the States of Ohio and Pennsylvania, known as the Northern Panhandle, is a hotbed of enthusiastic beekeepers. Among those who stand out with prominence is Will C. Griffith, of Elm Grove. Mr. Griffith is connected with one of the large newspapers of Wheeling, but finds time during his spare moments to aid in the betterment of the industry. He has established a demand for honey among his neighbors that far exceeds the output of his apiary. In order to keep his customers supplied he has found it necessary to import large quantities every year. He is a strong advocate of Italian bees, the ten-frame hive, full sheets of foundation, ample super room for surplus and sufficient packing for wintering. Through his untiring efforts he has organized his beekeeping friends into a local association, besides being a prominent figure in organizing the State Association, of which he is Vice President.

A neighbor and close friend of Mr. Griffith is Adam J. Yahn, of Triadelphia. Mr. Yahn is a producer of comb and extracted honey. The snow-white double-walled hives neatly arranged above the green carpet of close cropped blue grass harmonize so well with the deep green of the poplar and basswood on the surrounding hillsides, that it certainly could not be otherwise than alluring to people of like natures to assemble and discuss their problems.

If by good fortune in your travels you should drive through Mercer county in late summer your attention would be drawn to a well-kept farm



LEVI GREGORY AND PART OF HIS MODERN APIARY. NOTE THE HOLLOW LOG IN THE FOREGROUND.

which seems entirely surrounded by a virgin forest of chestnut, poplar and basswood. Here and there in fields of ripening grain are many basswood trees. This is certain evidence that the owner is a friend of the bee. Upon inquiry you will be told that this particular farm is known as the "Elite Farm." What a fitting name! But who is the proprietor? No other than T. K. Massie, a veteran beekeeper whose name is prominent because of the "Massie" hive, of which he is the inventor. Mr. Massie has seen both sides of beekeeping, having met reverses through the ravages of foulbrood. His trouble has been largely due to neglect on the part of neighboring beekeepers which too often results in loss to the innocent party. Nevertheless, Mr. Massie never lost courage, but tried to secure legislation whereby he could compel treatment of disease in such cases. It was largely through his influence that West Virginia now has an efficient law for the control of bee diseases. Mr. Massie now holds the office of President in the West Virginia Beekeepers' Association.

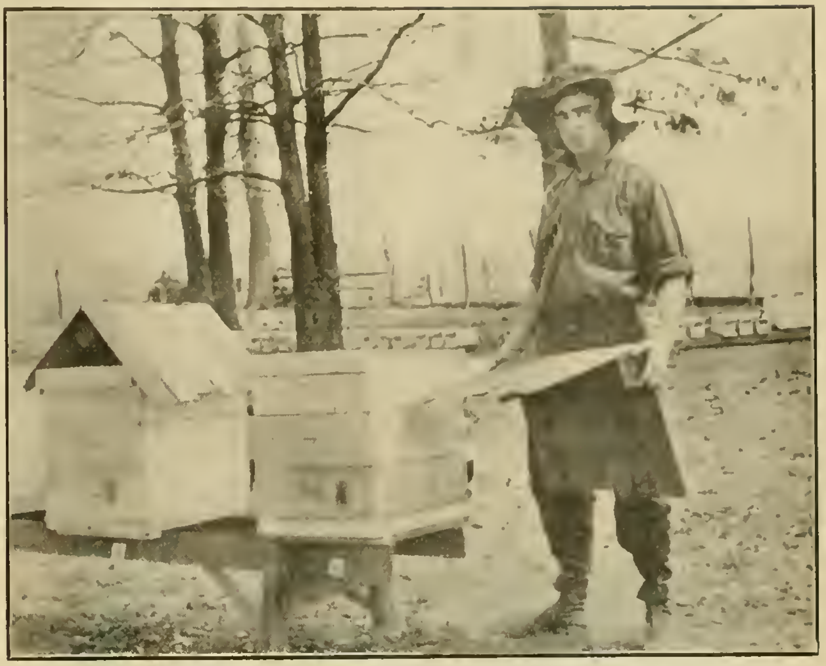
Many of the box-hive beekeepers have had their views changed within the past few months and as far as conditions permit are rapidly adopting modern methods. In connection with the present movement of good roads, it will be only a matter of a year or two until beekeeping in this vast domain will acquire a different aspect.

Charleston, West Virginia.

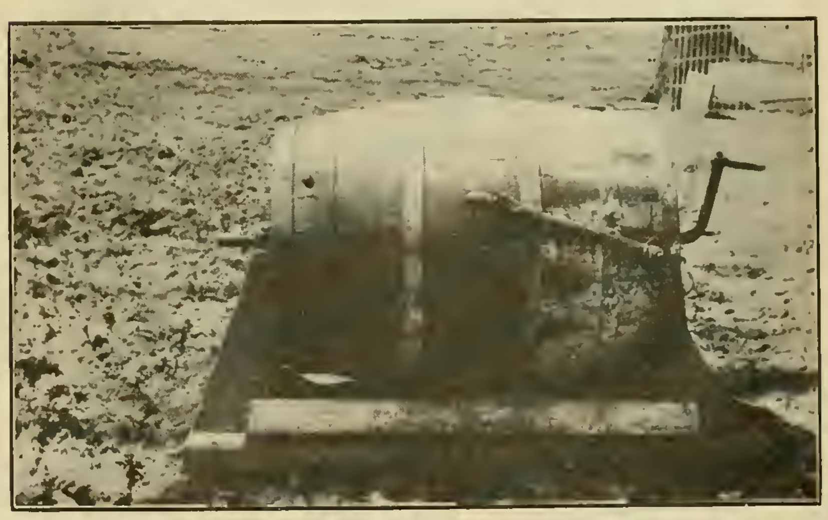
Shade Board Made of Shingles

MANY beekeepers, north and south, use shade boards of various kinds to protect the hives from the direct rays of the sun. In many places in the south where lumber mills are near at hand, slabs and shingles are very cheap. The picture shows a shade board made of shingles used by W. D. Achord, of Alabama. The butts of the shingles are nailed to a block and, when on the hives, look much like the roof of a building. Mr. H. C. Short is holding one of the boards in his hands. They are light and easy to handle, but one would expect them to be easily blown off by the wind.

In the middle west, where lumber is high, they would be altogether too expensive to be considered.



H. C. SHORT SHOWING THE SHADE BOARD USED IN THE ACHORD APIARIES



BARREL FOR MIXING FEED AT THE PENN APIARIES.

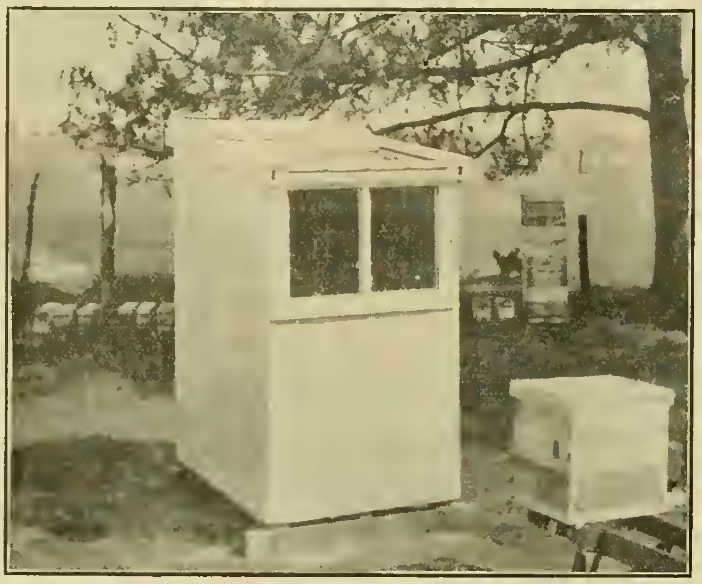
A CORNER OF GRANT LUZADER'S HOME APIARY SHOWING HIS TYPE OF HIVE.

Mixing Feed in Quantity

IN large apiaries it often becomes necessary to mix feed in large quantities. The Penn Company has a novel arrangement whereby the syrup is mixed on the way to the yard where it is to be used. A strong barrel is mounted with an axle at each end, one end a crank. When ready to start to an outyard where feeding is necessary the sugar and water are placed in the barrel and the bung closed. On the way one man keeps the barrel turning in much the same way that some of us do our churning, except that our barrel churns are mounted at the middle instead of the ends. The churn, however, would serve the same purpose very well. By the time the outyard is reached the agitation has mixed the syrup sufficiently and it is drawn off by means of the faucet, which can be seen in the picture.

A Grafting House for Queen Breeders

ON my trip through the south I became much interested in the grafting house in use at several of the queen breeding yards. The one shown in the picture belongs to W. D. Achord, but I found similar ones in use by M. C. Berry and also at the Forehand yards. The queen breeder finds it necessary to continue his work regardless of weather conditions. At times the days are wet or chilly and the delicate larvae used for grafting are in danger of chilling if left long exposed in the open. As will be seen from the picture, there is an abundance of light, since the top is of glass as well as the large window directly over the bench at which the beekeeper sits. It is an easy matter to select a few combs of newly-hatched brood and carry them into the little house where the queen breeder can work in comfort. Where the business is extensive it is necessary to graft a large number of cells every day. To carry the combs to the regular honey house and back to the queen yard is not as convenient as to step into this little building which is used for no other purpose. One great advantage of the grafting house is the freedom from the annoyance of robbers which are always buzzing around where combs containing honey are exposed. The building is only about four by six feet, and is easily moved.



GRAFTING HOUSE AS USED BY A SOUTHERN QUEEN-BREEDER.

LEGAL SERVICE DEPARTMENT

Dangerous Laws

In several States the responsibility of bee inspection is placed in the hands of men who are appointed by the Governor for a term of years. The office thus becomes a political one and is subject to all the dangers of the political system. When competent men happen to be appointed the work may be efficiently handled, but competent men will not always be selected, for it too often happens that political appointments are made for political reasons rather than because of the special qualifications which the appointee may have for doing the work of the office.

Even though high-grade men are always selected, there is likely to be frequent changes in policy. Since the inspector is responsible to no one in particular, he is free to decide to follow any particular policy or none at all, as appeals to him.

In many States the inspector is given absolute power to visit the beekeeper's premises, examine his hives, and if he finds disease to be present to destroy the property. This in itself may easily prove to be as great a danger to the beekeeper as the presence of foulbrood in the neighborhood. The inspector is constituted sole judge, jury and executioner and there is no appeal from his decision. Since the inspector has no supervision, if he is disposed to use the authority of his office to punish some beekeeper against whom he holds a grudge, the latter has small chance to get a square deal.

I certainly can see an advantage in laws that require proper attention to diseased bees, but feel that the inspector should be under supervision and subject to some check in case he is remiss in his duty. In case he is mistaken in his judgment and destroys healthy colonies there should be some relief for the owner of the bees. Rather there should be some provision to insure that healthy bees could not be destroyed under authority of the law. In States where the inspectors are under the supervision of the agricultural college there is little danger that incompetent inspectors will long be permitted to remain in office. There is also likely to be a uniform policy which will result in constant work toward a definite end. In case of a mistake or ill-advised action on the part of an inspector, the beekeeper can always appeal to the college authorities.

Supervision has another advantage in getting much better returns for money expended. At the New York meeting of inspectors and instructors in apiculture, it was common talk that in some States inspectors waste much time and money in visiting among the well known beekeepers of the State instead of spending the time in much needed field work.

After holding the office of State Inspector of Apiaries for five years under the political system, I have had a good opportunity to become familiar with the dangers of the system and with the difficulties under which the inspector must work. Supervision seems to me to be as much to the advantage of the inspector as to the beekeepers, and I fail to see how an inspector who has the welfare of the industry at heart can fail to welcome the change from the political system to the supervision of the agricultural college, or department of agriculture.

Spraying During Bloom

"I had 25 stands of bees poisoned and killed by people spraying their trees in full bloom. What can I do about it?" ILLINOIS.

There has been so much complaint from beekeepers who have lost bees from spraying while in bloom that several States have passed laws making it a misdemeanor to spray the trees while in bloom. New York has such a law, but the extreme penalty is only a fine of fifty dollars.

The best remedy which the beekeeper has in cases of this kind is to convince the fruit grower that it is to his own interest to spray after the petals fall. At this time the poison will be more effective in destroying the codling moth as well as saving the bees. Horticulturists and entomologists very generally advocate spraying after the blossoms fall and their influence is doing more than anything else to save the day for the beekeepers. The fruit grower and beekeeper have a mutual interest which should not conflict. The bees are of so much value in carrying pollen among the blossoms that the fruit grower would in many cases gather but poor crops without them. According to some authorities, spraying when the blossoms are open injures the fruit as well as killing the bees.

In States where there is no law forbidding, if the fruit grower persists in spraying while the trees are in bloom about the only thing which the beekeeper can do is to move his bees away during the period of danger. This involves much labor and expense, but many beekeepers find themselves forced to do it.

Ordinance Against Bees

"There is a determined effort to get the city council to pass an anti-beekeeping ordinance. The agitation seems to be the result of some personal grievances. The council has been reluctant to pass the law, but the complaints are persistent. They are not after me, but in getting others they may get me."

INDIANA.

In this case we have communicated with the city officials of the place mentioned and have called their attention to court decisions which have declared an ordinance of this kind to be invalid.

The keeping of bees in cities and towns is a source of much annoyance, and attempts to prohibit the keeping of bees within the limits of the corporation are frequent. The beekeeper should bear in mind that the public has rights which he is bound to respect as much as his rights must be respected. If bees are so situated that they persistently annoy neighbors or passersby they thereby become a nuisance and there is ample authority of law to abate a nuisance.

If the bees are so placed as to endanger others, the beekeeper may be held liable for damages that result. For instance, in a case upheld by the Iowa Supreme Court, the hives were so placed that the only unobstructed passageway for the bees was toward the road. A man hitched some horses to a post in the road and the horses were stung to death by the angry bees. In this case the beekeeper was held for the damages, since his bees should not have been so placed in a situation where it was necessary for them to fly directly from the hive into the public road.

While there is authority of law for declaring bees a nuisance when they in fact become so, ordinances declaring all bees a nuisance within the limits of the town have not been upheld by the courts.

The subject of "Bees as a Nuisance" is fully covered in "Productive Beekeeping," in the chapter on laws that concern the beekeeper. It will be well for persons interested to refer to this book for further information on this subject.

BEE-KEEPING FOR WOMEN

Conducted by Miss Emma M. Wilson, Marengo, Ill.

A Good Harvest for a Beginner

I am going to give you the history, so far, of the first swarm of bees that I ever saw, and will appreciate the favor if you will let me know if I am getting the average amount of honey from the colony.

I got the swarm June 12, 1916. In the fall I took off 48 boxes of honey, leaving brood-chamber as it was.

Above bees swarmed June 29, 1917.

On July 7, 1917, I took from original hive 92 full boxes (or sections), of honey, and on examining the hive September 22, 1917, find by middle of week I will be able to take off three full supers of honey, or 84 boxes.

This has been a poor honey season, so they tell me. My new swarm has just commenced to build in first super.

MRS. W. C. BARTHOLOMEW.
Illinois.

You are to be heartily congratulated. A harvest of 176 sections from a colony, with 100 per cent increase, is something a veteran would hardly feel like complaining about, even in a good season, and the season of 1917 has been unusually poor throughout the State, and no doubt in your locality. It seems almost a pity at this particular time that you did not have extracted honey instead of sections, considering the loud call from the government for the largest possible production of honey. The yield of extracted honey as compared with sections is variously estimated. A few say they can produce as much in sections as they can of extracted; a larger number say they can produce twice as much of extracted as of sections; but most agree that 50 per cent more extracted can be sucured. Figuring at this last rate, instead of 176 you might have had 264 pounds of extracted honey. In many places one kind of honey can be sold at as high a price as the other, at least this year, so you would have been fifty per cent better off if you had run for extracted.

Suppose you had obtained 264 pounds of extracted honey. You ought to be able to get 15 cents a pound for it (some are predicting that before spring it will be up to 20 cents a pound; but even if you got but 13 cents a pound, 264 pounds would amount to $34.32. The swarm ought to be worth to you at least $6, making the income from your one colony a little more than $40. If you should feel like complaining at that, you must be hard to please.

Of course, you may not average so well as that when you increase the number of your colonies, but the possibilities in the case are so promising that there is strong inducement to continue in the ranks of women beekeepers.

Bees in Vermont

The year 1917 has not been a very decided success in bee culture in Northern Vermont. It would be hard to say just why, for never did white clover cover the pastures more fully or the field clovers, red and alsike, look more enticing. Bees, in most cases, wintered well and seemed strong when put out, but we had a great deal of wet weather, and while it was ideal to make plants grow and bloom, my own theory of the lack of surplus is that they stayed in the hive and consumed during the rainy days much of the honey that they had stored during the sunny days, and by the time settled fair weather came the best of the honey season was over.

Some of the small beekeepers have had swarms cleaned out by moths. The bees were brown bees. Some time ago they were Italianized, but as the bulk of the northern bees are the common bees or a cross breed, the introduction of an occasional Italian queen does not hold them long with any Italian blood. The moths got into some of my hives, but have done little or no damage, for I open my hives often and if I find a wax worm or a cocoon I destroy it.

I lost two new swarms in unexpected ways this summer. The first was made of two frames of honey and brood and the old queen that I had taken from a hive that I had requeened. They went to work at once and had increased to nearly double, had filled another frame with brood and were coming fine, as I thought. On the last pleasant day they were going in and out lively as crickets. Then came a rain of long duration. When the weather cleared that hive was as silent as the grave. Indeed it was the grave of all that growing brood. Not a bee was in it except those in the cells, and those, of course, were dead. There were no dead bees on the board. They did not starve, for there was honey in the tops of the combs.

I had read and been told that bees would never desert their brood. It seemed to me that this swarm did just that. The swarm next this seemed to be much larger after this. Why did they go from their own hive to this? If the queen died they had eggs to raise a new one. If she went out with them why did the nurse bees leave also. Why did they go, in, after or just before a storm? I give it up. As Josh Billings said, "It isn't so much what folks don't know, as what they know that ain't so." I feel sure that the bee business is the worst possible business for knowing things that ain't so. The old proverb is that you never can tell which way a toad will jump, and I think apropos of bees, that after you have seen him jump a few times you still never can tell what will happen next.

The next little misfortune that I had was with a new Italian queen. I introduced her to a frame of sealed brood, gave a partial frame of honey, and for a week everything went well; then it began to rain, and for fear they would not have enough to eat, I filled a pint Mason jar with syrup, placed it in the feeder and put it inside beside the frame. It rained the best part of a week, but secure in the thought that they were well fed. I forebore to open that hive until it cleared off. Oh me! Oh my! Queen and bees were dead, starved to death. They had eaten all their honey, but the syrup they had not touched. Why, Oh why? Didn't they know enough to crawl into the mouth of that feeder, where was food a plenty ready for them? Next time I try that trick I will look at them every day, if it rains pitchforks, tines down, and I will smell up that syrup with peppermint or anise, or something, so that they will know it is there.

My bees did not swarm, owing, I think, to removing frames for new queens. They did no great things, but like the old fellow's maple sugar, they made "enough to sell and some to keep," and they went into the cellar looking good.

JEAN WHITE.

Feeding Box Hives—Transferring

I have two colonies of bees in hives which have just starters in the sections and the combs are built crooked. What means would you advise me to use in feeding for winter? I expect to transfer them as soon as advisable to hives which have the full sheet of foundation. When would be the best time for this?

Mrs. W. R.

The first question is whether your bees will need feeding for winter. Even though they may have gathered little or nothing from white clover or other early sources—which is the case in many places—it is possible that the fall flow may be enough to supply sufficient winter stores, if, indeed, it gives no surplus.

It is possible, however, that you are in a location where there is generally no fall flow to speak of, and in that case it may be well for you to feed without waiting. Nothing is better than good honey to feed, but probably you haven't that. If you feed during the first part of September you can feed a syrup of equal parts of granulated sugar and water. No need to cook it; just stir it into the water till it is dissolved; only it will dissolve more quickly in hot water. If you wait till about the time bees stop flying, the syrup must be made strong, 5 pints or pounds of sugar to 2 pints or pounds of water, and to dissolve so thick a syrup it will be well for you to have the water hot or boiling on the stove and stir the sugar into it slowly, being sure not to scorch it, for burnt syrup is death to bees in winter. There is danger that so heavy a syrup may granulate, and to prevent this you may add an even teaspoonful of tartaric acid to each 20 pounds of sugar. Dissolve the acid in a little cold water and stir it into the syrup just before or after taking it off the stove.

Any good bee-feeder may be used, but if you don't happen to have any, you can use the crock-and-plate method. A one-gallon crock is a good size, although any size will answer. Put the syrup in the crock, lay over it a piece of heavy woolen cloth, or else 5 or 6 thicknesses of cheese-cloth, and over this lay a common plate upside down; then with one hand under the crock and the other over the plate quickly turn the whole thing upside down. Set your feeder on top of the top-bars, set over it an empty hive-body, and cover up bee-tight. If you feed early there is no need to dissolve the sugar. Just put dry sugar into the crock and then pour in the water.

It may be well to wait till the colony swarms next year before transferring.

MISCELLANEOUS NEWS ITEMS

The Boys' Working Reserve.—There has been organized under the Department of Labor, a boys' working reserve, the object being to urge boys under military age in the larger cities and smaller towns to come to the aid of the farmer and replace as far as possible the men called to training. There are nearly three million such boys, and if their entire help can be thrown in after school is out in the spring and until school reopens in the fall, they will help enormously.

Apiary work is admirably suited to just such boys. The bulk of the work comes at a time when the school boy is available. Every beekeeper should endeavor, if he needs help during the coming season, to help make a success of the Boys' Working Reserve.

Bee Conventions.—The following is a list of bee meetings to be held during December:

Chicago-Northwestern, Nov. 30 and Dec. 1.
Minnesota, Dec. 4 and 5.
Iowa, Dec. 4 and 5.
Wisconsin, Dec. 6 and 7.
Northeastern Kansas Dec. 7 and 8.
Ontario, Dec. 11, 12 and 13.

Order Supplies Now.—A recent bulletin of the Bureau of Food Administration has the above for its title. It says: "Prices are lower now than they will be later in the season, and bankers will usually be glad to advance money if asked to do so. Every carload of farm supplies shipped now will help to relieve freight congestion next spring. We can help ourselves and our country by buying now."

How is the Apple Crop?—Some reports coming in from beekeepers estimated the apple crop as far larger than last season, such reporters expecting, therefore, that honey would drop in price, owing to decreasing demand. It is true that in the whole of the West, the apple crop has been better than last year. This is offset, however, by the decrease in the Eastern crop. New York, last year produced about a third of the apples of the whole country. She finds herself short this year over 3,000,000 barrels of the 1916 crop, or 57 per cent less. It is estimated that the total crop of the country will hardly be in excess of 1916. Even were it greater, there is hardly room to prophesy that honey would drop as a consequence. There is a big demand for honey for foreign shipment, which will more than offset any slackening of the home demand.

Beekeeping in North Carolina.—Bruce Anderson, county agent at Winston-Salem, N. C., is not asleep on his job of getting his beekeepers to become beekeepers and not keepers of bee "gums." With this end in view he has just sent out to members of his "Bee Club" a circular letter urging that all colonies be transferred during 1918 into movable-frame hives. He proceeds then to give the results obtained by a few of his members who did transfer during 1917 and introduced Italian stock.

Mr. Anderson also gives directions for preparing bees for winter. Packing over the cluster is suggested.

North Carolina had an excellent crop in 1917, following a failure in 1916.

New York State Meeting.—The regular annual meeting of the New York State Association of Beekeepers' Societies will be held at Syracuse, N. Y., on December 4 and 5.

F. GREINER, Sec'y.

At the Zoo.—At the park. "Where are the monkeys?"

"The monkeys? We have no monkeys."

"But," showing a paper, "it says here that the Park Committee has established a model 'apiary.'"—British Bee Journal.

Missouri Meeting.—The Missouri beekeepers will meet at Columbia, in the rooms of the Department of Entomology, during Farmers' Week, beginning January 14 and ending January 18. The beekeepers days will be Wednesday and Thursday, the 16th and 17th. The editor of the American Bee Journal has promised a paper on "Commercial Beekeeping." For information write to Dr. L. Haseman, Entomologist, Columbia, Mo.

Kootenay and British Columbia.—Mr. W. J. Sheppard, Secretary of the Kootenay Beekeepers' Association, publishes a 4-page report, showing very favorable crops, and announces that the Kootenay Association is planning to amalgamate with the Beekeepers' Association of British Columbia. The members of both these associations buy queens and bees by the pound in the United States. Mr. Sheppard's address is Nelson, B. C.

The New Jersey Fair.—The New Jersey Beekeepers' Association, with some assistance from the New Jersey

Agricultural Department, secured space in one of the agricultural buildings at the famous State Fair at Trenton, held on September 24-28, for an Association exhibit, intended primarily to bring honey to the attention of the people. Various active members of the association volunteered to be in attendance upon designated days to talk honey and bees, and to assist State Bee Inspector E. G. Carr in supplying the demands of honey buyers. Hundreds of people were told of the wonders of bee life and industry, and thousands of questions were answered. It was a grand carnival of honey propaganda. There were the usual exhibits of beautiful honey, and fine wax which looked good enough to eat. Mr. C. H. Root had on exhibition in a wire cage, a colony of live bees which established itself and built combs on the limb of a tree in the open air. Mr. Root discovered the colony early in the season, and reinforced the combs by inserting several long hat pins, also a roof was placed over the nest. Mr. Root carried the curiosity in his hand, the forty miles to Trenton by auto .A common exclamation was "Oh, see the bees making honey!" Many prizes were awarded for honey, wax, vinegar, cake and candy. The exhibits of honey, cake and candy were especially attractive. Lack of space prevents giving a full list of the awards. Mr. C. H. Root scored highest and secured the sweepstakes prize—6 radio bee-escapes. It was remarkable that there was almost no sale for comb honey, while the stock of extracted was several times exhausted. All honey was sold under an association label.

NEW JERSEY
BEEKEEPERS ASSOCIATION

EXHIBIT AT THE NEW JERSEY STATE FAIR, SHOWING MR. C. H. ROOT'S OPEN AIR COLONY. MR. ROOT AT THE LEFT.

The Situation in West Virginia.—The disease situation in West Virginia is entirely under control as the result of work done by Chief Inspector C. A. Reese, of Charleston, and his assistants, the past summer, and plans are now under way for winter meetings and educational work to supplement the inspection.

Mr. Kennith Hawkins, of the U. S. Department of Agriculture has spent the past month in the State, in which time a survey of beekeeping conditions in ten counties has been made, nearly fifty beekeepers pledged to act as demonstrators in winter packing methods in co-operation with their county farm agents, and under present plans these men will continue next summer to act as demonstrators in better methods in beekeeping.

Vast stretches of tulip, basswood, sourwood and gums exist in the State, mostly in nearly inaccessible mountain regions, where over 90 per cent of the bees are in box hives. Reports of 100 pounds per colony from log gums were gotten from reliable sources, indicating what may be done in bee culture in West Virginia.

At a conference between Professor Reese and Mr. Hawkins some definite work was planned, and with the efficient organization and excellent State appropriation for the work there should be no difficulty in putting West Virginia decidedly on the beekeeping map.

Wisconsin Convention.—The Wisconsin State Beekeepers' Association will hold its annual convention at Madison, December 6 and 7. A full two days' program has been prepared, with assurance that every number will respond. Following is a partial list of subjects:

Address of welcome by Magnus Swanson, Federal Food Administration.

Response by N. E. France.

"The Foulbrood Situation and What It Demands"—Dr. E. W. Ball, State Entomologist.

"Bee Diseases"—N. E. France.

"My Experience with European Foulbrood"—Frank Kittinger.

"Honey Containers for 1918"—C. P. Dadant.

"Markets"—E. R. Root.

"Maintenance of Colonies from Close of Honey Flow to the Beginning of the Next Season"—Geo. S. Demuth.

"Substitute Honey for Sugar"—Mrs. R. E. Vaughan, of the U. W. Home Economics Department, with demonstrations.

"Comparisons Between Outdoor and Cellar Wintering"—Edw. Hassinger, Jr.

"Large Brood Chambers"—Harry Lathrop.

"The Importance of Wisconsin's Apiary Industry, as Viewed by the Wisconsin Department of Agriculture"—C. P. Norgord, Commissioner.

"Beekeepers' First Aid"—A. C. Allen.

"Beekeepers I Have Known"—H. H. Moe.

"Organization"—H. F. Wilson, of the Wisconsin Apiary Department.

Five-minute talks and discussions will be in the hands of A. C. Allen, of Portage.

We are also expecting representatives of the Extension Department of the Bureau of Entomology at Washington, D. C.

GUS DITTMER, Sec'y.

Topeka, Kansas Meeting. — The Northeast Kansas Beekeepers' Association will hold its annual meeting on December 7 and 8. Our State Horticultural meeting will be in session the 5th and 6th of December, making a double attraction for beekeepers and fruit growers. Kansas beekeepers are urged to attend.

A. D. HOCKENSMITH,
President.

Convention Notice of Ontario Beekeepers' Association.—The Executive Committee of the Ontario Beekeepers' Association has arranged to hold its annual convention at Hotel Carls-Rite, Toronto, on Tuesday, Wednesday and Thursday, December 11, 12, and 13, 1917. The following subjects and speakers have been arranged for:

Mr. B. F. Kindig, State Apiary Inspector of Mighigan, has consented to be present and speak on "Some Mistakes in Management in the Bee-Yard" and of "Retailing the Honey Crop."

Subjects discussed by Ontario members will be "Simple Methods of Rearing and Introducing Queens," by John Newton, Thamesford; "Mysterious Losses of Adult Bees," by James Armstrong, Selkirk; William Couse, Streetsville, and W. A. Chrysler, Chatham; "Out Apiaries," by E. T. Bainard, Lambeth; "The Farmer Beekeeper," by W. W. Webster, Little Britain; "Apiary Locations," by H. G. Sibbald, Toronto; "Wintering," by J. L. Byer, Markham, and "Beekeeping Appliances," by W. J. Craig, Brantford.

There will also be question drawers and general discussions as opportunity offers.

On one of the convention evenings the members will have dinner together at Hotel Carls-Rite, so that the social side of the convention may not be overlooked.

This is the annual gathering of the beekeepeers of Ontario. All are cordially invited, including those from across the line who can make it convenient to attend.

MORLEY PETTIT
Secretary-Treasurer.
Guelph, Ont.

Number of Bees Per Pound.—Fifteen hundred worker bees just dead from starvation (a small, queenless nucleus) were accurately weighed in lots of 500 before decomposition began. From each of these weighings the number of bees per pound was: (1) 6005 bees, (2) 5600 bees, (3) 5170 bees, averaging 5591 bees per pound. These bees had starved, so that there would be more bees per pound than if they had been alive with some honey in their sacs.

Moisture and Dry Tissue in Starved Bees.—Determinations of moisture and dry tissue were made on 1500 starved bees, before decomposition began, in lots of 500. Moisture in these bees averaged 73.05 per cent of total weight. Total dry tissue in these bees averaged 26.95 per cent of total weight.

These two items of interest were done in co-operation with the Division of Agricultural Biochemistry, University of Minnesota.

L. V. FRANCE,
Instructor in Bee Culture.

Nov. 8, 1917.

(The weight of bees has been tested at different times. Bernard De Gelieu found them to number all the way from 3,640 to 5,460 in a pound. Collin, a very accurate observer of the middle nineteenth century, counted 5,100 bees "in normal condition" in a pound, but in the swarm he found less than 4,300 in a pound, because they were filled with honey. The A-B-C of Bee Culture calls 4,800 bees a pound, in round numbers. The above experiment brings a similar conclusion, since its result on "dead bees" is about 5,600 in a pound. Call 5,000 live bees a pound and you will not miss it far.—Editor.)

Illinois Meeting.—The Illinois meeting was well attended, but neither Dr. Phillips nor N. E. France were present. Young Mr. Erbaugh, now in the extension service, represented Dr. Phillips. The Association had the courtesy to extend honorary membership to Dr. C. C. Miller and the editors of the bee magazines. We extend our thanks for the favor. President E. J. Baxter having declined serving another year, the office of president was conferred upon Dr. A. C. Baxter, of Springfield. Although these men bear the same name, they are not in any way related. Dr. Baxter is a devoted worker and the Association cannot fail to flourish under his leadership.

UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Markets

Semi-Monthly Market News Bulletin

Honey Arrivals for preceding Two weeks:

Keokuk, Iowa—400 pounds Iowa.

Hamilton, Ill.—2250 pounds Iowa, 4210 pounds Mississippi, 2500 pounds Wisconsin.

Medina, Ohio—300 pounds Illinois, 43,600 pounds Wisconsin, 48,686 pounds Michigan, 36,300 pounds Wyoming, 6348 pounds Ohio, 21,500 pounds Minnesota.

Telegraphic Reports From Today's Markets—Jobbing Prices

(In many markets in the honey trade the term "jobber" is commonly applied to the original receiver who buys direct from the grower in carlot quantities. However, in these reports we use the term "wholesale carlot receiver" to designate the carlot purchaser, while the term "Jobber" refers to the dealer who buys in less than carlot quantities from the carlot receiver and who sells direct to the retailers. The prices quoted in this report represent the prices at which the "wholesale carlot receivers" sell to the "jobbers.")

Note: Arrivals include receipts during preceding two weeks. Prices represent current quotations.

Cincinnati—No fresh carlot arrivals; 20 barrels Porto Rico, 17 cases Florida, 56 cases Alabama, 10 cases Wisconsin arrived; local receipts moderate. Demand and movement good, market very strong. Extracted honey: Domestic light amber, 15-17c; orange and white sage, 17c; Porto Rico dark amber, 15c per pound. Comb honey: Fancy white heavy, $4.75; No. 1 white heavy, $4.50 per 24-section case. Beeswax: Demand moderate, market steady; average yellow, 38-40c per pound.

St. Louis—No fresh carlot arrivals. Supplies light. Comb honey: Scarce, few sales; 24-section cases, fancy, $4.50-4.75; No. 1, $4.00-4.25; No. 2, $3.75--4.00. Extracted honey: Light amber in cans, 15c per pound; in barrels, 13-13½c; dark honey one-half to 1c lower. Beeswax: Supplies very light; small lots, 37½c per pound.

Kansas City—1 car California arrived; no cars on track; express approximately 100 cases Missouri comb and 7 cases Colorado extracted arrived. Demand and movement moderate, market firm. Comb honey: California cleaning up; quality good; 24-section flat cases, white, No. 1, $4.00; Colorados, quality and condition good, 24-section cases, white, fancy $4.50; No. 1, $4.25-4.40; No. 2, $4.10-4.15; Missouris, few sales; quality and condition good; 24-section cases, white, No. 1, small lots $4.50-5.00. Extracted honey: Colorados, quality and condition generally good; white and extra light amber, 16-16c per pound; dark 12-13c. Beeswax: Approximately 100 pounds arrived; supplies very light; demand limited, market steady; all sales in small lots, 35-40c per pound.

Chicago—No fresh carlot arrivals. Supplies very light. Demand moderate, market strong. Michigan, Wisconsin, Iowa and Minnesota: Comb, fancy clover and Basswood, 22-23c per pound; other grades one-half cent lower; extracted, best mostly 15-15½c per pound. California extracted: Supplies very light; light amber 16-16½c per pound. Beeswax: No sales.

Philadelphia—1 car New York, 1 Wyoming, about 15 barrels Mexico and approximately 1000 cases nearby comb arrived. Demand good, market strong, few sales. Wyoming extracted: Light amber, 17c per pound; comb, no sales; Mexican: Extracted, 12-13c per pound. Beeswax: Receipts light, demand moderate, market strong, 36-38c per pound.

Denver—Receipts light; approximately 100 cases comb and 6000 lbs. extracted arrived. Demand exceeds supply; market firm. Comb honey: Colorado, white, quality and condition good, 24-section cases, No. 1, $4.05; No. 2, $3.50. Extracted honey: White to light amber, 14½-15c per pound. Beeswax: Receipts light; price paid producer, 34c per pound.

New York—16 barrels Santo Domingo, 213 barrels Porto Rico, 21 cases California arrived. Local and export demand good, market strong. Extracted: California, fancy, light best 15½-17½c; poorer, 13¾-15c per pound; West Indian, receipts moderate, $1.40-1.45 per gallon. Beeswax: 25 bags Porto Rico, 155 bags Santo Domingo arrived; demand good, market steady; dark, 32-33c per pound; yellow, 35-36c.

Minneapolis—No rail arrivals; local receipts very light. Supplies very light. Demand moderate, market very strong. Comb honey: Minnesota, Wisconsin, best white, 24-section cases mostly $4.25; Colorado, white, mostly $4.50 per case. Extracted honey: Colorado, white, in 330-pound casks, mostly 15½c per pound; in 60-pound cans, mostly 16c; 10-pound pails, 17½c per pound. Beeswax: No sales reported.

St. Paul—Receipts: 8 boxes Wisconsin comb, weighing 1965 pounds, 1 car Wisconsin comb, 1 car Wisconsin extracted, 5 cars extracted, and extremely light local receipts. Demand good; market very strong. Brisk inquiry on both extracted and comb. Comb honey: Wisconsin and Minnesota, best white, 24-section cases, mostly $4.50. Extracted honey: White, in cans, 15c per pound; in 10-pound pails, mostly 16c. Beeswax: No sales reported.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to
DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

It is inferred that all readers have access to the book "A Thousand Answers to Beekeeping Questions." This will avoid duplication in answering, as the book contains answers to practically all questions ordinarily asked on beekeeping. Subjects not specifically treated, or which are not clear to the reader will be further explained in this department at the request of any subscriber.

Re-queening

I am an old American Bee Journal reader. I am now 81 years old, and my eyes are getting weak. Next summer I must re-queen my bees, though I fear about not finding the queens. Do you know of a way to find them? There are the queen-traps; would they work when I turn them around?. If I brush the bees into an empty hive today would they leave the queen there and go back to the old hive?

ANSWER.—Even though your eyes are weak, with a good pair of spectacles you ought to be able to see the queen. Use little smoke, move gently, and don't get the bees to running, for then the queen is likely to hide, and queens have a way of hiding that has always been a mystery to me. If you don't find the queen after looking over the combs two or three times, better wait an hour or more, or till next day. It ought to work all right to do as you suggest, reverse a queen-trap at the entrance, or brush the bees into an empty hive-body placed over the hive, with an excluder between the two stories. Of course in the latter case, before putting the excluder over the hive you would take out all the frames, carefully brush the bees from one frame upon the other frames, and put back into the hive this frame with no bees. Then you would put on the excluder and the second story. When you have brushed the bees from all of the combs into this upper story, you can hasten the downward journey of the bees by using a little smoke. Of course, when the bees have all gone into the lower story the queen will be left on the excluder.

Bees on Shares—Advertising

1. Could I run bees on shares, and how should the terms be?
2. Would it be a good plan to buy bees with a year or more of time to pay for them?
3. Do you think it profitable to rent bees or not?
4. Could I get what I wanted by advertising?
5. With ten Hoffman frames half full, or nearly so, about how many pounds of honey would there be in hive?

Answers.—1. In a good many cases bees are run on shares, sometimes satisfactorily and sometimes not. There is no fixed rule as to terms, but it is quite important that there be a definite agreement in advance, and that it be made in writing. Otherwise there is danger of misunderstanding and hard feelings. Generally one party furnishes location, bees, hives, and tools, and pays for half the supplies, and half of any sugar fed, and the honey is divided equally.

2. I think bees have been bought in that way, and whether it would be a good thing for you depends on whether you are an efficient beekeeper in a good location.

3. Sometimes, and sometimes not.

4. Most likely.

5. Somewhere in the neighborhood of forty pounds.

Building Up With Nuclei

I have at present twenty-five colonies of bees in 10-frame dovetailed hives, all of them in strong condition, both as to bees and stores All have 1917 queens, 3-banded Italians. I would like to have as many colonies as possible next summer—not just colonies, but good strong ones that could store a fair surpluc, say fifty pounds. I have been figuring that I would buy ten 1-lb packages of bees, to arrive about April 15, and these I would use where needed in order to bolster up any weak colony; then get fifty more pound packages with queens, to arrive about May 10. I would then use my 25 colonies to help those pound packages build up into strong colonies for the beginning of the white clover flow which begins here about June 25 or July 1. After white clover comes basswood about July 15.; alfalfa also yields good by that time Then comes sweet clover, buckwheat and the fall flowers. Last spring I had ten colonies and sent for ten 1-lb. packages with queens. I ordered them to arrive May 10, but it was May 28 when I received them. I also made the sorry mistake of sending for 10-lb. packages without queens, and those did not arrive until June 5. I then had 20 package to get in shape in a month's time, and ten of them without queens.

I used my ten strong colonies for helping those queenless nuclei, but after a while I saw I could not make it, so I turned my attention to the other ten nuclei and got them in pretty good shape (they averaged about 75 pounds surplus each). Of course, I should have united the queenless pound packages with the others as soon as they arrived, but I was too selfish for that. I wanted *all*, and figured I could raise my own queens for them. I gave that up, however, and I finally dumped those ten queenless nuclei together and made three colonies out of those ten.

Do you think I can get those 50 nuclei strong enough by the 1st of July? If so, how would you advise me to go at it?

This is my second year with bees, started last year with two swarms in July increased to five same season, then bought five colonies early last spring, making ten colonies in April, 1917.

Please tell me when you think I should get the pound packages for best results (last spring I took the bees out of the cellar on April 5). I do not care if I have to feed a good deal, and will have plenty of time to look after them well, just so I know how to go at it in the right way. NORTH DAKOTA.

Answer.—To start May 10 with fifty 1-pound nuclei, with the aid of twenty-five colonies, building them up into strong colonies by June 25 or July 1 is something of a feat. You may do it, but there's a fine lot of chances that you will not. Of course, the season will make a difference. But you can at least bring part of them up, and your policy will be to strengthen only part at first, and continue aiding others afterward Then you will be all right, whether you bring up the whole filty or not. In drawing brood and bees from the strong colonies make it a fixed rule that in no case will you draw enough to reduce a colony to less than four brood. Don't give one brood apiece to each of the fifty nuclei at the start, but bring up as many as you can to the strength of four or five brood, then later bring up others, and so on.

For best results it will hardly be advisable to begin before bees can forage and fly well daily.

Colony Disappearing

The strongest colony I own was all right during the season and at the close of the honey-flow in September I looked through it to see how things were. To my surprise, I found there was not a bee left nor the least bit of honey in the frames. The colony next to this one came through all right. Why would the bees fly away? They had as much chance to gather supplies as the rest. NEW YORK.

Answer.—A fair guess would be that the colony became queenless and dwindled down, perhaps being robbed.

Miscellaneous

1. On page 137 of Thousand Answers, nucleus plan of increase, do you have to cage the queen when putting her with the two frames of brood back on the old stand?
2. Will it be safe to leave comb-foundation in wired frames where it will freeze?
3. Please explain how you make your bottom-rack that fits in the bottom-board, and what kind of entrance-block do you use?
4. In using a flat top, the kind you use, do the bees fasten it down tight, and how do you remove it without jarring the bees?
5. How do the Dadants manage to keep the queen from laying in the supers without using an excluder? MISSOURI.

Answers.—1. No.

2. I don't know any too certainly. I think it would generally be safe, but with very hard freezing it is possible there might be some loosening of the wires from the foundation. Who has had experience in this matter?

3. The bottom-rack is in the form of a ladder, the cross-pieces or rungs being nailed upon the two parallel pieces, with a space of half an inch or less between each two rungs. The entrance-block is more properly an entrance-board, for it is a thin board large enough to cover the entire entrance and project upward upon the front of the hive, where it is fastened by two small nails partly driven in. At one of the lower corners of the little board is a hole about an inch square.

4. Yes, the bees glue it shut. Opening it, however, causes no jar unless the weather is very cold, and at such times hives are not too often opened.

5. Their deep and large frames give so much room for the queen that there is little desire to go elsewhere, and if a queen should happen to go above, she is likely to say, "Why, these upper frames are so shallow I don't like them; guess I'll go back." So there's little "managing" to be done, but if there is the Dadants can speak for themselves.

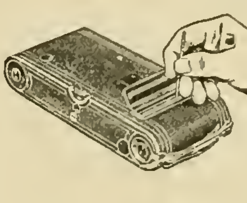
Bees By the Pound

1. If you were going to order bees by the pound next spring and you were sure of a cold April and May, would you order them delivered early and feed them, or have them delivered about the 1st of June and chance getting any surplus?
2. Could I put sugar syrup in drawn comb to feed them on, or would I have to use a feeder?
3. Would a 3-pound colony in a good season need supers if delivered the 1st of June?

Answers.—1. Under the circumstances mentioned, I think I would wait till the later time

2. Either way; but if the season is good they hardly ought to need feeding.

3. Yes, very likely.



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Crop Reports and Market Conditions

For our December issue we asked the following questions of reporters:

1. How are bees going into quarters?
2. Has the price and scarcity of sugar caused any bees to go into winter short?
3. How does the honey flora look? What is its condition compared to a year ago?
4. How much honey do you know of still in the hands of producers, and what price are they holding for?
5. What is the demand for honey locally?
6. What are the large buyers offering for extracted honey?
7. How much comb honey is left on hand?

CONDITION OF BEES

Bees seem to be going into winter in good shape in the whole northeast section of the country. They are normal as to young bees, possibly a little short on stores, which will require close attention by the beekeeper when the bees come out in spring. In the whole of the South except Texas, bees are in fine shape and have sufficient stores.

In Texas conditions have not improved generally, though some localities have had a fair fall flow, putting the bees in good shape in young bees and honey. In other sections bees are still starving, and it is certain that the losses will be heavy, especially among those who do not carefully feed.

The Mississippi valley reports bees in fair shape. Some sections have had a good fall flow, while others have had to feed to insure plenty of stores.

In the Missouri valley the condition is parallel.

Colorado, Montana, Idaho and other inter-mountain States report bees in fine shape. New Mexico reports them as fair.

In California bees will go into winter in good shape generally. They have had to be fed in some localities. In a few others a short fall flow has left some colonies short in young bees.

SUGAR AND STORES

Taken generally, bees are likely shorter of stores the country over than they have been for two or three years. Most up-to-date beekeepers have fed where needed.

Luckily, the extreme shortage of sugar did not come until the feeding period was over, so that it was possible to get all the sugar needed if the price was paid for it.

PLANT CONDITIONS

The South is much encouraged over conditions of plants for the year, being ahead of those of a year ago. In the East conditions are much more favorable than a year ago, though some rain is needed to put clover out of drouth danger.

The same condition applies in the Mississippi Valley, especially in Ohio, Indiana, Illinois, Iowa generally, Missouri, Kansas and Nebraska.

In Michigan, Wisconsin and Minnesota plant conditions were so favorable a year ago that it is doubtful if they are better this year. More rain is needed.

In other sections plant conditions cannot be accurately judged until the next season opens.

HONEY ON HAND

Very limited quantities of honey, relatively, are in the hands of producers, probably not more than five per cent or less the country over. Most local salesmen are either cleaned of honey or selling out rapidly. What is still left is commanding generally a price of 15 cents f. o. b. for extracted and $4.00 f. o. b. for comb.

Following is a list of some of the honey still unsold at the time this was written, and the prices asked:

One-half car white Idaho extracted, 13½ to 16 cents.
3,000 pounds amber California extracted at 14 cents.
6,000 pounds California amber extracted at 13 cents.
8,000 pounds Montana white extracted at 16 cents.
200 cases Montana comb at $4.00.
10,000 pounds Montana extracted white at 15 cents.
30,000 pounds Montana white extracted at 16 cents.
40 cases Colorado comb at $4.50.
800 cases Colorado comb; price not named.
20,000 pounds Colorado white extracted at 16 cents
40,000 pounds Colorado white extracted at 15 cents

LOCAL DEMAND

In almost all localities the local demand exceeds the supply of honey, so that all stocks are fast being cleaned up.

OFFERS

In a majority of cases large buyers are offering under 15 cents for extracted honey. There is no doubt, however, that the acute shortage of sugar in many localities is going to make honey of even more ready sale Some few beekeepers report the sale of large lots of honey as high as 16 cents for extracted.

COMB HONEY

Probably in recent years there has not been such a shortage in comb honey. The only large lot mentioned in reports is the lot of 800 cases in Colorado, and this was not reported directly by the beekeeper.

SUMMARY

Probably in no year before has there been such a range in the price received wholesale by the beekeeper for his honey. Some demanded 15 cents for extracted white and got it. Others contracted ahead, some as low as 8 cents for the best extracted.

Even after markets materially advanced, many beekeepers did not keep themselves informed as to conditions and accepted relatively lower prices.

One organization in the West got around 15 cents for all extracted honey sold for members and a corresponding price for comb.

HONEY AND BEESWAX

Chicago, November 17.—The movement in honey of all kinds has been quite free during the past month, especially in extracted, for which there has been an active foreign demand, and as high as 16½c per pound has been paid, which has stiffened the market up so that for the best grades of white clover and similar goods 17c per lb. is obtained. Ambers sell at from 1c to 3c per lb. less, according to flavor and quality. White comb, A1 to fancy, brings 22c to 23c per section. Amber grades range from 1c to 3c less. Beeswax is steady at 35c to 37c per lb.

R. A. Burnett & Co.

New York, November 16.—The market on honey is in such an irregular condition that we do not feel justified in quoting any prices, as they change from day to day.

Hiildreth & Segelken.

Kansas City, November 15.—In regard to the honey market, will say that the supply of comb honey on the Kansas City market is very light, lighter than last year at this time by a big per cent. The fact of the matter is that none of the dealers have anything but a very light supply on hand. and we are entirely cleaned up for the present. No. 1 comb honey would job at about $4.50. The market on extracted is in good shape, with only a moderate supply on hand, the very best selling at around 15 cents.

While some of the smaller beekeepers may be holding their honey, there is no large amount being held that we know of.

C. C. Clemons Produce Co.

Denver, November 16.—Our present prices to retailers are as follows: Extra fancy white comb honey, $5.00; No. 1 white comb honey, $4.50; No. 2 comb honey, $4.00. Extracted white honey, according to quantity, 16-18c; light amber, 14-15c. For clean yellow beeswax, delivered here, we are paying 38c in cash and 40c in trade.

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Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

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American Bee Journal, Hamilton, Ill.

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will undoubtedly be answered in the new bee book, "Dr. Miller's Thousand Answers." For beginner and veteran alike. Not intended to replace other bee books, but to supplement them. Price, postpaid, $1.25, or with the American Bee Journal one year, both $1.75.

American Bee Journal, Hamilton, Ill.

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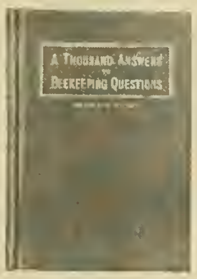

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Statement of the Ownership, Management, Circulation, Etc.

of AMERICAN BEE JOURNAL, published Monthly at Hamilton, Ill., for October 1, 1917.

STATE OF ILLINOIS, ss.
County of Hancock.

Before me, a Notary public in and for the State and County aforesaid, personally appeared M. G Dadant, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown above in the caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations,.

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher—American Bee Journal, Hamilton, Illinois.
Editor—C. P Dadant, Hamilton, Illinois.
Managing Editor—None.
Business Manager—M. G. Dadant, Hamilton, Illinois.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give the name and names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

C. P. Dadant, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
M. G. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill.
Jos. Saugier, Jr., Hamilton, Ill.
Leon Saugier, Hamilton, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are (If there are none, so state):

None.

That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also in cases where the stockholder or any security holder appears upon the books of the company as trustee or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) M. G. DADANT,
Business Manager.

Sworn to and subscribed before me this third day of October, 1917.
(Seal) T. R. KLAY.

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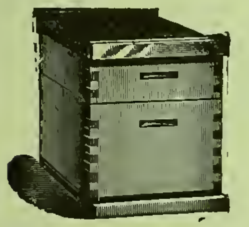

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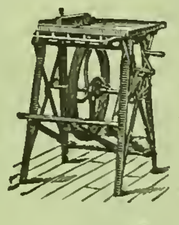

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